Formal Session of the Board of Trustees
April 29, 2022
9:00 a.m. – 11:00 a.m.
Location: MUB Ballroom B
Public Meeting

I. Call to Order
Jeffrey Littmann, Chair

II. Roll Call
Sarah Schulte, Secretary

III. Confirm Agenda
Jeffrey Littmann, Chair

IV. Opening Remarks

A. Opening Remarks of the Board Chair
Jeffrey Littmann, Chair

B. Opening Remarks of the University President
Richard Koubek, President

V. Public Comment Period

VI. Committee Reports

A. Academic Affairs Committee
John Bacon, Committee Chair

B. Audit and Finance Committee
Andrea Dickson, Committee Chair

C. Leadership Committee
Steve Tomaszewski, Committee Chair

VII. Consent Agenda

A. Approval of Minutes

B. Resignations, Retirements, and Off Payroll

C. Fundraising Productivity Report

VIII. Action and Discussion Items

A. Employee Recognition
Rick Koubek, President

B. Tenure-Track Appointments Not Involving Tenure and/or Promotion
Jacqueline Huntoon, Provost

C. Appointments Involving Tenure and/or Promotion
Jacqueline Huntoon, Provost

D. Promotions
Jacqueline Huntoon, Provost

E. Emeritus Rank
Jacqueline Huntoon, Provost

1. Jiann-Yang (Jim) Hwang, Professor Emeritus, Department of Material Science and Engineering

2. Patricia Sotirin, Professor Emerita, Department of Humanities,

3. Stanley Vitton, Professor Emeritus, Department of Civil, Environmental, and Geospatial Engineering

F. Proposal for Bachelor of Science in Business Analytics
Jacqueline Huntoon, Provost

G. Proposal for Master of Science in Sustainable Communities
Jacqueline Huntoon, Provost

H. Proposal for Bachelor of Science in Policy and Community Development
Jacqueline Huntoon, Provost

I. Elimination of Shelved Programs
Jacqueline Huntoon, Provost

J. Revision to Board Policy 4.10, Privacy of Personnel Records
Jacqueline Huntoon, Provost

K. Revision to Board Policy 6.1, Faculty Definitions
Jacqueline Huntoon, Provost

L. Revision to Board Policy 1.19, Presiding Officers - Chair and Vice-Chair
Steve Tomaszewski, Leadership Committee Chair

M. Revision to Board Policy 5.1-5.3, Equal Opportunity, Discrimination or Harassment

N. Approval of FY23 General Fund Operating Budget
Sue Kerry, Treasurer

O. Approval of External Auditor
Sue Kerry, Treasurer

P. Approval of Michigan Arts and Culture Council Resolution

IX. Reports

A. Gamma-Ray Astronomy at Michigan Tech
Petra Huentemeyer, Director, Earth, Planetary, and Space Sciences Institute (EPSSI) and Professor, Physics

B. Provost Report
Jacqueline Huntoon, Provost

C. Undergraduate Student Government
Cheyenne Scott, President

D. Graduate Student Government
Nathan Ford, President and Ranit Karmakar, President-Elect

E. University Senate
Samuel Sweitz, President

X. Informational Items

A. Analysis of Investments

B. Research & Sponsored Programs

C. Advancement & Alumni Relations

D. Media Coverage

E. Employee Safety Statistics

F. Disposal of Surplus property

G. Summary of Scholarships, Awards, and Grants - Board Policy 9.3

XI. Other Business

XII. Date for Next Formal Meeting: August 4, 2022

XIII. Adjourn

VII. CONSENT AGENDA

These are routine matters that generally do not require discussion or debate. Any Board member can remove any consent item from the agenda by request. They will be considered as one resolution.

A. Approval of Minutes

B. Resignations, Retirements, and Off-Payroll

C. Fundraising Productivity Report

VII-A. APPROVAL OF MINUTES

RECOMMENDATION: That the Board of Trustees approves the minutes of the formal session of February 25, 2022, as distributed to the Board.

VII-C. RESIGNATIONS, RETIREMENTS, AND OFF PAYROLL

Attached is a report of resignations, retirements, and off-payroll which have been approved by the President and are included for his convenience in recommending acceptance by the Board.

RECOMMENDATION: That the Board of Trustees accepts the resignations, retirements, and off-payroll determinations.

BOARD OF TRUSTEES OFF-PAYROLL REPORT

(January 23, 2022—April 2, 2022)

RETIRED

Name	Class	Department	Title	Most Recent Hire Date	Term Date
Robert Baratono	Staff	Keweenaw Research Center	Research Engineer	02/09/1982	02/04/2022
Paige Hackney	Staff	Pavlis Honors College	Assistant to the Associate Provost & Budget Manager	08/10/2005	02/18/2022
Glenn Larkin	Staff	College of Forest Resources & Environmental Science	Senior Research Engineer/Scientist	07/01/1998	03/11/2022
James Waineo	Staff	Keweenaw Research Center	Engineer/Scientist	08/27/1989	03/05/2022

OFF-PAYROLL

Name	Class	Department	Title	Most Recent Hire Date	Term Date
Tucker Alsup	Staff	Advanced Power Systems Research Center	Assistant Research Engineer	06/01/2018	02/11/2022
Eric Boersma	Staff	Information Technology Operations	System Administrator	05/17/2012	03/11/2022
John Bramble	Staff	Auxiliary Services	Manager of Dining Services	06/09/2008	02/04/2022
Holly Corrigan	Staff	Wadsworth Hall Food Service	Assistant Manager	06/17/2019	03/18/2022
Lacy Cygan	Staff	Residential Dining	Food Service Helper	10/07/2019	01/31/2022
Jace Daniels	Coach	General Athletics	Assistant Coach – Football	12/17/2018	02/05/2022
Jessica Hill	Staff	Facilities Management	Custodian	05/31/2021	02/01/2022
Joseph Kurtiz	Staff	Center for Technology & Training	Software Developer	06/01/2021	03/05/2022
Vienna Leonarduzzi	Staff	Pavlis Honors College	Marketing & Communications Director	01/09/2015	03/05/2022
Jeremy Lundy	Staff	Transportation Services	Assistant Manager	01/16/2017	03/20/2022
Tammy Mitchell	Staff	Wadsworth Hall Food Service	Food Service Helper	01/24/2022	02/18/2022
Nataly Nayback	Staff	Human Resources	Administrative Aide	01/24/2022	02/22/2022
Zachary Nicholas	Staff	General Athletics	Assistant Director of Athletic Marketing & Communications	06/28/2021	01/08/2022
Leila Peterson	Staff	McNair Hall Food Service	Food Service Helper	01/13/2020	03/05/2022
Sarah Porter	Staff	Student Leadership & Involvement	Office Assistant	01/25/2021	02/11/2022
Jeanne Watts	Staff	Waino Wahtera Center for Student Success	Academic Success Coordinator	07/22/2013	02/05/2022
Charlotte Weinstein	Staff	Michigan Tech Research Institute (MTRI)	Assistant Research Scientist – Geospatial Programmer	05/21/2018	03/15/2022
Douglas Wilken	Staff	Physics	Laboratory Associate	07/11/2016	02/05/2022
Michael Windfield	Staff	Facilities Management	Custodian	10/04/2021	03/15/2022

VII-D. FUNDRAISING PRODUCTIVITY REPORT

Attached is a fiscal year-to-date comparative report of gifts to Michigan Technological University and the Michigan Tech Fund.

RECOMMENDATION: That the Board of Trustees acknowledges the gifts to Michigan Technological University.

Michigan Technological University
Michigan Tech Fund
Fundraising Productivity Report

July 1, 2021 through March 31, 2022

Compared to Prior Fiscal Year

FY22

Source	YTD Total	Adjustment	FY Goal (in millions)	% of Goal
Individual Giving	17,319,863		20.75	83%
Corporate Giving	1,923,101		2	96%
Foundation & Other Org Giving	2,270,080	8,285,750	5	211%
Corporate Sponsored Research	12,215,427		13	94%
FUNDRAISING TOTAL	**33,728,471**	**8,285,750**	**40.75**	**103%**

Amt of TOTAL from Gifts-in-Kind	*160,901*	*(included in the source totals above)*
Amt of Gifts/Pledges earmarked for the endowment	*9,851,675*	*(included in the source totals above)*
Amt of Gifts/Pledges earmarked for unrestricted funds	*2,307,300*	*(included in the source totals above)*

		FY Goal	% of Goal
TOTAL PROGRESS TOWARDS FY GOAL	**$ 42,014,221**	**40.75**	**103%**

Realized Planned Gifts - All	*4,002,272*	*(NOT included in the source totals above)*
Amt of Realized Planned Gifts earmarked for the endowment	*996,437*	

Realized Pledges	*2,511,809*	*(NOT included in the source totals above)*

FY21

Source	YTD Total	Adjustment	FY Goal (in millions)	% of Goal	FY21 Total
Individual Giving	19,228,808	*2,000,000*	18.25	116%	20,547,746
Corporate Giving	1,728,225		1	173%	2,295,923
Foundation & Other Org Giving	3,235,364	142,359	1	338%	4,187,024
Corporate Sponsored Research	9,829,877		11	89%	14,807,686
FUNDRAISING TOTAL	**34,022,274**	**2,142,359**	**31.25**	**116%**	**43,980,737**

Notes:

The Adjustment totals include changes to gift records (eg. gift received date, amount, or other donor driven gift modifications)

The FUNDRAISING TOTAL includes outright gifts, as well as new pledge and planned gift commitments, made in the specified date range.

Realized planned gifts and realized pledges are not included in the FUNDRAISING TOTAL.

An individual's gifts made through a donor-advised fund are counted under the individual.

An individual's gifts made through another source (i.e. family foundation or closely held business) are counted under the source entity.

The FUNDRAISING TOTAL for fiscal years 2020 and later include gifts-in-kind under other sources (Major Gifts, Annual Giving, etc).

VIII. ACTION AND DISCUSSION ITEMS

A. Employee Recognition

B. Appointments, not involving Tenure and/or Promotion

C. Appointments, involving Tenure and/or Promotion

D. Promotion

E. Emeritus Rank

F. Proposal for Bachelor of Science in Business Analytics

G. Proposal for Master of Science in Sustainable Communities

H. Proposal for Bachelor of Science in Policy and Community Development

I. Elimination of Shelved Program

J Revision to Board Policy 4.10, Privacy of Personnel Records

K. Revision to Board Policy 6.1, Faculty Definitions

L. Revision to Board Policy 1.19, Presiding Officers - Chair and Vice-Chair

M. Revision to Board Policy 5.1-5.3, Equal Opportunity, Discrimination or Harassment

N. Approval of FY23 General Fund Operating Budget

O. Approval of External Auditor

P. Approval of Michigan Arts and Culture Council Resolution

VIII-A. EMPLOYEE RECOGNITION

For our employees that have worked for Michigan Tech for 35 or more years and in recognition of their distinguished service and outstanding contributions to Michigan Tech, the Board would like to honor them with a resolution of appreciation.

RECOMMENDATION: That the Board of Trustees adopts the Resolution of Appreciation for the following individual:

1.) Robert Baratono – 40 years of service – Research Engineer, Keweenaw Research Center

VIII-B. TENURE-TRACK FACULTY APPOINTMENTS NOT INVOLVING TENURE AND/OR PROMOTION

The departments, with support from the respective colleges, have requested that the individuals identified in this section be granted the indicated appointments. The administration supports the recommendations of the departments and colleges regarding these appointments.

RECOMMENDATION: It is recommended that the Board of Trustees approves the appointments listed in this section. The appointments do not include tenure or promotion.

Michigan Tech

Office Memo

Office of the Provost and
Senior Vice President for Academic Affairs

Phone: (906) 487-2440
Fax: (906) 487-2935

TO: Richard Koubek, President

FROM: Jacqueline E. Huntoon, Provost and Senior Vice President for Academic Affairs

Jacqueline E Huntoon

DATE: April 14, 2022

SUBJECT: Tenure-Track Faculty Appointment Recommendations

In accordance with Board of Trustees Policy 2.2, Duties and Powers of the President, I am submitting the following faculty appointment recommendations for your review and subsequent approval by the Board of Trustees at their meeting on April 29, 2022.

Appointment without Tenure for Two Years
Effective August 15, 2022

Jun Dai	Assistant Professor	College of Business
Sidike Paheding	Assistant Professor	Applied Computing
Briana Bettin	Assistant Professor	Computer Science
Junqiao Qiu	Assistant Professor	Computer Science
Leo Ureel	Assistant Professor	Computer Science
Daniel Dowden	Assistant Professor	Civil, Environmental & Geospatial Eng.
Paulus Van Susante	Assistant Professor	Mechanical Eng. – Eng. Mechanics
Yongchao Yang	Assistant Professor	Mechanical Eng. – Eng. Mechanics
Tara Bal	Assistant Professor	College of Forest Resources & Env. Sci.
Kristin Brzeski	Assistant Professor	College of Forest Resources & Env. Sci.
Tao Liu	Assistant Professor	College of Forest Resources & Env. Sci.
Jared Wolfe	Assistant Professor	College of Forest Resources & Env. Sci.
Yinan Yuan	Assistant Professor	College of Forest Resources & Env. Sci.
Gordon Paterson	Assistant Professor	Biological Sciences
Trista Vick-Majors	Assistant Professor	Biological Sciences
Erich Petushek	Assistant Professor	Cognitive & Learning Sciences
Samantha Smith	Assistant Professor	Cognitive & Learning Sciences
Stephanie Carpenter	Assistant Professor	Humanities
Kelly Kamm	Assistant Professor	Kinesiology & Integrative Physiology
Fan Dai	Assistant Professor	Mathematical Sciences
Xiao Zhang	Assistant Professor	Mathematical Sciences
Elena Giusarma	Assistant Professor	Physics
Kartik Keshava Iyer	Assistant Professor	Physics
Mark Rhodes	Assistant Professor	Social Sciences
Adam Meckler	Assistant Professor	Visual & Performing Arts

Appointment without Tenure for One Year
Effective August 15, 2022

Jenny Apriesnig	Assistant Professor	College of Business
Laura Connolly	Assistant Professor	College of Business
Josue Reynoso Vallejo	Assistant Professor	College of Business
Ulrich Schmelzle	Assistant Professor	College of Business
Nathir Rawashdeh	Assistant Professor	Applied Computing
Ashraf Saleem	Assistant Professor	Applied Computing
Xiaoyong “Brian” Yuan	Assistant Professor	Applied Computing
Jianhui Yue	Assistant Professor	Computer Science
Hoda Hatoum	Assistant Professor	Biomedical Engineering
Roger Guillory	Assistant Professor	Biomedical Engineering
Sangyoon Han	Assistant Professor	Biomedical Engineering
Smitha Rao	Assistant Professor	Biomedical Engineering
Yixin Liu	Assistant Professor	Chemical Engineering
Ricardo Eiris (Pereira)	Assistant Professor	Civil, Environmental & Geospatial Eng.
Cory McDonald	Assistant Professor	Civil, Environmental & Geospatial Eng.
Stephen Morse	Assistant Professor	Civil, Environmental & Geospatial Eng.
Hongyu An	Assistant Professor	Electrical & Computer Engineering
Lan Zhang	Assistant Professor	Electrical & Computer Engineering
Michelle Jarvie-Eggart	Assistant Professor	Engineering Fundamentals
David Labyak	Assistant Professor	Manufacturing & Mechanical Eng. Tech.
Parisa Abadi	Assistant Professor	Mechanical Eng. – Eng. Mechanics
Jung Yun Bae	Assistant Professor	Mechanical Eng. – Eng. Mechanics
Ana Dyreson	Assistant Professor	Mechanical Eng. – Eng. Mechanics
Susanta Ghosh	Assistant Professor	Mechanical Eng. – Eng. Mechanics
Vijaya Malladi	Assistant Professor	Mechanical Eng. – Eng. Mechanics
Hassan Masoud	Assistant Professor	Mechanical Eng. – Eng. Mechanics
Oren Abeles	Assistant Professor	Humanities
John Gruver	Assistant Professor	Mathematical Sciences
Byung-Jun Kim	Assistant Professor	Mathematical Sciences
Shan Zhou	Assistant Professor	Social Sciences

Formal notification of these decisions will be sent to each individual Monday, May 9, 2022.

APPROVED:

Richard Koubek, President

4/14/22

Date

VIII-C. APPOINTMENTS INVOLVING TENURE AND/OR PROMOTION

The policy for granting tenure and/or promotion to faculty members requires that the process begin with deliberations in the candidate's home unit and proceed through additional review at multiple levels. Recommendations are reviewed by the provost, and the provost makes a recommendation to the president of the University. The president has accepted the provost's recommendation regarding tenure and/or promotion for the candidates listed in this section.

RECOMMENDATION: It is recommended that the Board of Trustees approves the appointments involving tenure and/or promotion listed in this section.

Michigan Tech

Office Memo

Office of the Provost and
Senior Vice President for Academic Affairs

Phone: (906) 487-2440
Fax: (906) 487-2935

TO: Richard Koubek, President

FROM: Jacqueline E. Huntoon, Provost & Senior Vice President for Academic Affairs

Jacqueline E Huntoon

DATE: March 28, 2022

SUBJECT: Appointment with Tenure Recommendation or Tenure and Promotion Recommendations

In accordance with Board of Trustees Policy 6.4, Academic Tenure and Promotion, the following faculty members have been recommended for appointment and/or promotion with tenure. I have reviewed and support these recommendations and request that the Board of Trustees be asked to approve them at their April 29, 2022 meeting. If approved, the promotions will be effective August 15, 2022.

Promotion from Assistant Professor without Tenure to Associate Professor with Tenure

Bo Chen	Computer Science
Rebecca Ong	Chemical Engineering
Lei Pan	Chemical Engineering
Jeremy Bos	Electrical & Computer Engineering
Roohollah Askari	Geological & Mining Engineering & Sciences
Sajjad Bigham	Mechanical Eng. – Eng. Mechanics
Lesley Alexandra Morrison	Humanities
Angela Carter	Social Sciences

Promotion from Associate Professor without Tenure to Associate Professor with Tenure

Carsten Kuelheim	College of Forest Resources & Env. Sci.
Fengjing Liu	College of Forest Resources & Env. Sci.
Tatyana Karabencheva-Christova	Chemistry

APPROVED:

Richard Koubek, President

3.30.22

Date

INFORMATION SHEET FOR BOARD OF TRUSTEES
BO CHEN
Michigan Technological University

Bo Chen, who is currently an assistant professor without tenure in the Department of Computer Science in the College of Computing, is being considered for promotion to associate professor with tenure in the Department of Computer Science in the College of Computing.

Academic Degrees:

Ph.D.	2014	New Jersey Institute of Technology, Newark, NJ
M.E.	2008	University of Chinese Academy of Sciences, Beijing, China
B.E.	2005	University of Science and Technology Beijing, Beijing, China

Professional Record:

2017 – present	Assistant Professor (without tenure), Department of Computer Science, Michigan Technological University
2016 – 2017	Research Assistant Professor, Department of Computer Science, University of Memphis, Memphis, TN
2015 – 2016	Postdoctoral Scholar, College of Information Sciences and Technology, The Pennsylvania State University, State College, PA
2014 – 2015	Postdoctoral Associate, Department of Computer Science, Stony Brook University, Stony Brook, NY
2008 – 2014	Graduate Teaching/Research Assistant, Department of Computer Science, New Jersey Institute of Technology, Newark, NJ
2006 – 2008	Graduate Research Assistant, Computer Network Information Center, Chinese Academy of Sciences, Beijing, China

Summary of Accomplishments:

- *Teaching*

Dr. Chen has taught CS4471/CS5471 (Computer Security), CS4461/EE4272 (Computer Networks), CS5472 (Advanced Topics in Computer Security), and the newly created CS5740 (Development of Trusted Software). He also regularly teaches a 1-credit independent study course CS4090 (Cybersecurity Competitions). His average teaching evaluation is 4.55/5.00 (max: 4.82/5.00, min: 4.16/5.00) and in Spring 2018 and Spring 2019 his evaluations were in the top 10% of all MTU teaching evaluations. In Summer 2020, he earned the ETOM Online Teaching Certificate. He consistently demonstrates his dedication to cybersecurity education at MTU. He was involved in the creation of the MTU Cybersecurity BS major and has been co-PIs on education grants aiming at boosting cybersecurity education among students. He has involved 14 graduate students (including 2 PhD students) and 7 undergraduate students in research. His PhD student, Niusen Chen, successfully passed his research proposal examination in Fall 2021.

- *Research/Scholarly Activity*

Dr. Chen's research interests are in cybersecurity. His research results have been disseminated broadly via 52 publications (30 of them were published since being at MTU). His publications appear in prestigious venues including ACM CCS, NDSS, AAAI, ACSAC, IEEE DSN, ESORICS, ACM ASIACCS, ACM CODASPY, Journal of Computer Security, IEEE Transactions on Communications, etc. He received a Best Paper Award from EAI AC3 2021, a Distinguished Paper Award from ACSAC 2017, and an Outstanding Paper Award from ACM

CODASPY 2013. He received a Research Excellence Fund Award from MTU (2020) and an Achievement Award from MTU ICC (2019). His research has been funded by the National Science Foundation and the National Security Agency. His total funding received as PI is $506,593, and as co-PI is $3,800,605.

Cybersecurity is one of the five core computing areas of the newly launched College of Computing and, his research endeavors are a significant component in the growth of this area. He plans to actively move this area forward through continued efforts in cybersecurity research, education and outreach. He also plans to actively integrate cybersecurity with other interdisciplinary areas of the college including data science, Internet of things, edge computing, and human-centered computing.

- *Service*

Dr. Chen has served on the Computer Science Department graduate committee since Fall 2017. He has co-advised the CS cybersecurity reading group since Fall 2017, as well as the MTU RedTeam since Spring 2019. He serves as the faculty coach of MTU NCL (National Cyber League) cyber competition team. The team was ranked 3rd nationally out of 922 teams across the US in the Spring 2021 competition season. He has served on two faculty search committees and on the MTU CIS advisory board from November 2017 to May 2018.

In support of the profession, Dr. Chen has served on the program committees of 30 international conferences and workshops, including ACM ASIA Conference on Computer and Communications Security (ASIACCS 2022), ACM Conference on Data and Application Security and Privacy (CODASPY 2022), Annual Computer Security Applications Conference (ACSAC 2021). He has served as a reviewer for 35 journals and magazines including IEEE Transactions on Dependable and Secure Computing, IEEE Transactions on Information Forensics and Security, ACM Transactions on Privacy and Security, IEEE Transactions on Communications. In addition, he was the (founding) general chair of 2021 EAI International Conference on Applied Cryptography in Computer and Communications. He also served as an NSF panelist.

- *Selected Recent and Significant Publications/Exhibitions/Performances/Etc.*
  - N. Chen, **B. Chen**, and W. Shi. MobiWear: A Plausibly Deniable Encryption System for Wearable Mobile Devices. In Proceedings of *EAI AC3 2021* (**Best Paper Award**).
  - D. Wu, Z. Xu, **B. Chen**, Y. Zhang, and Z. Han. Enforcing Access Control in Information-Centric Edge Networking. *IEEE Transactions on Communications* 69, no. 1 (2021): 353-364.
  - W. You, **B. Chen**, L. Liu, and J. Jing. Deduplication-friendly Watermarking for Multimedia Data in Public Clouds. In Proceedings of *ESORICS 2020*. Acceptance rate: 19.7%.
  - X. Meng, S. Wang, K. Shu, J. Li, **B. Chen**, H. Liu, and Y. Zhang. Towards Privacy Preserving Social Recommendation under Personalized Privacy Settings. *World Wide Web* 22, no. 6 (2019): 2853-2881.
  - B. Gao, **B. Chen**, S. Jia, and L. Xia. eHIFS: An Efficient History Independent File System. In Proceedings of *ASIACCS 2019*. Acceptance rate: 17%.
  - B. Chang, F. Zhang, **B. Chen**, Y. Li, etc. MobiCeal: Towards Secure and Practical Plausibly Deniable Encryption on Mobile Devices. In Proceedings of *DSN 2018*. Acceptance rate: 28%.
  - X. Meng, S. Wang, K. Shu, J. Li, **B. Chen**, H. Liu, and Y. Zhang. Personalized Privacy-Preserving Social Recommendation. In Proceedings of *AAAI 2018*. Acceptance rate: 25%.
  - L. Guan, S. Jia, **B. Chen**, F. Zhang, etc. Supporting Transparent Snapshot for Bare-metal Malware Analysis on Mobile Devices. In Proceedings of *ACSAC 2017*. Acceptance rate: 19.7% (**Distinguished Paper Award**).
  - S. Jia, L. Xia, **B. Chen**, and P. Liu. DEFTL: Implementing Plausibly Deniable Encryption in Flash Translation Layer. In Proceedings of *ACM CCS 2017*. Acceptance rate: 18%.

INFORMATION SHEET FOR BOARD OF TRUSTEES
REBECCA G. ONG
Michigan Technological University

Rebecca G. Ong, who is currently an assistant professor of chemical engineering without tenure in the Department of Chemical Engineering in the College of Engineering, is being considered for promotion to associate professor of chemical engineering with tenure in the Department of Chemical Engineering in the College of Engineering.

Academic Degrees:

Ph.D.	2011	Chemical Engineering, Michigan State University, East Lansing, MI
B.S.	2005	Chemical Engineering, Michigan Technological University, Houghton, MI
B.S.	2005	Biological Sciences, Michigan Technological University, Houghton, MI

Professional Record:

2016 – present	Assistant Professor (without tenure), Chemical Engineering, Michigan Tech
2016	Research Assistant Professor, Chemical Engineering, Michigan Tech
2015	Instructor, Department of Chemical Engineering, Michigan Tech
2013-2016	Research Assistant Professor, Michigan State University, East Lansing, MI
2012-2013	Research Assistant III/S, Michigan State University, East Lansing, MI
2010-2011	Visiting Scholar, Hong Kong University of Science and Technology, Kowloon, Hong Kong
2006-2011	Graduate Research Assistant, Michigan State University, East Lansing, MI

Summary of Accomplishments:

- *Teaching*

Over the past five years, Dr. Ong has taught five courses, including a core graduate course, an undergraduate elective on alternative energy, core undergrad courses, and a bioprocessing laboratory. She redesigned three courses with entirely new content (Alternative Energy, the environment portion of Process Safety & Environment, and the Bioprocess Engineering Lab) and created significant amounts of new material for the other two courses. Dr. Ong's goal is to increase student engagement and retention using four approaches: incorporate active learning and creative uses of technology, develop professional skills and higher-order reasoning through design projects, provide opportunities for student choice and learning flexibility, and ensure accessibility of course materials. She has implemented pedagogical innovations over the past five years, including retrieval practice to increase content retention, use of Canvas Mastery Paths to allow students to choose their assignment, development of a course FAQ and visual launchpad in Canvas, use of active learning with clicker questions and think-pair-share activities, and providing fully accessible slides with gaps to increase student engagement during lectures. These items have been identified as highlights in student evaluations. Graduate students have used Dr. Ong's Canvas page and assignments as models when developing their courses and her Canvas page was one of three highlighted by MTU in 2020 during a panel on virtual engagement with students. Over five years, Dr. Ong has received high student teaching evaluations (4.41 ± 0.39) (low = 1 and high = 5), and in courses she has taught repeatedly, her evaluations have increased over time, indicating her commitment to continuous improvement based on student and peer feedback. Dr. Ong's transitions of a lab and lecture

to virtual formats during the COVID pandemic were also highly praised by students, and one even described the transition as “flawless”. Dr. Ong has been recognized for her contributions to teaching by the College of Engineering and was a Dean’s Teaching Showcase member in 2020.

- *Research/Scholarly Activity*

Dr. Ong’s research on lignocellulosic bioenergy and bio-based products stems from her unusual educational background in chemical engineering and plant biology. In 2016 she was invited to join one of four DOE-funded bioenergy research centers (the Great Lakes Bioenergy Research Center) to investigate how environmental factors experienced during growth affect biomass conversion to fuels**.** During the past five years, she expanded her research program into three new directions to take advantage of additional funding opportunities: development of bio-based products, sustainability assessment of bio-based processes, and waste plastic utilization**.** She has received over $2M of research funding as PI or co-PI on large, collaborative grants from the Department of Energy (the GLBRC project mentioned previously), National Science Foundation (investigating risks, barriers, and opportunities for renewable energy transitions in rural and Indigenous communities), and DARPA (conversion of waste plastic into food). Over the past five years, she has also mentored five Ph.D. students, five M.S. students, two Postdocs, and twenty-two undergraduate students and supervised three research staff. One Ph.D. and M.S. student have successfully defended and graduated, and one undergraduate student has received multiple local and national awards for her research. Dr. Ong has a strong record of publication with over 41 peer-reviewed journal articles and book chapters, of which seven are on research conducted while at Michigan Technological University.

- *Service*

Dr. Ong’s most significant service contribution has been as a member (2017-2018) and then chair (2019-present) of the chemical engineering Graduate Committee. During this time, in addition to general responsibilities, she rewrote the graduate handbook, designed and revised the new graduate assessment plan, drafted large documents for internal and external program reviews, developed a new format for the qualifying exam and approach to pair Ph.D. students with faculty advisors, created a new orientation for incoming students, and dealt with COVID impacts on the graduate students and graduate program. Dr. Ong has served as advisor for the Omega Chi Epsilon chemical engineering honor fraternity; session chair for the American Institute of Chemical Engineers annual meeting; poster session chair for the Symposium on Biomaterials, Fuels, and Chemicals; a grant reviewer for various NSF and USDA panels; and reviewer for various journal articles in her field. She is also committed to outreach. In 2019, Dr. Ong helped organize funded workshops to train Pre-K and Kindergarten teachers on how to teach engineering. Since 2017, she has designed and led new activities with polymers for the Chemical Engineering Summer Youth programs.

- *Recent and Significant Publications/Exhibitions/Performances/Etc.*

- Chandrasekar M, Joshi L, Krieg K, Chipkar S, Burke E, Debrauske DJ, Thelen KD, Sato TK, and **Ong RG**. A high solids field-to-fuel research pipeline to identify interactions between feedstocks and biofuel production*. Biotechnol. Biofuels* (2021) **14**(1):179.
- Andeme Ela RC, Tajiri M, Newberry NK, Heiden PA, and **Ong RG**. Double-Shell Lignin Nanocapsules Are a Stable Vehicle for Fungicide Encapsulation and Release*. ACS Sustain. Chem. Eng.* (2020) **8**(46):17299-17306.
- **Ong RG**, Higbee A, Bottoms S, Dickinson Q, Xie D, Smith SA, Serate J, Pohlmann E, Jones AD, Coon JJ, Sato TK, Sanford GR, Eilert D, Oates LG, Piotrowski JS, Bates DM, Cavalier D, and Zhang Y. Inhibition of microbial biofuel production in drought-stressed switchgrass hydrolysate*. Biotechnol. Biofuels* (2016) **9**(1):237.

INFORMATION SHEET FOR BOARD OF TRUSTEES
Lei Pan
Michigan Technological University

Lei Pan, who is currently an assistant professor without tenure in the Department of Chemical Engineering in the College of Engineering, is being considered for promotion to associate professor with tenure in the Department of Chemical Engineering in the College of Engineering.

Academic Degrees:

Ph.D.	2013	Virginia Polytechnic Institute and State University, Blacksburg, VA
M.S.	2009	Virginia Polytechnic Institute and State University, Blacksburg, VA
B.S.	2008	Central South University, Changsha, China

Professional Record:

2016 – present	Assistant Professor (without tenure), Department of Chemical Engineering, Michigan Technological University
2013 - 2016	Postdoctoral Associate, Center for Advanced Separation Technology, Virginia Tech, Blacksburg, VA
2008 - 2013	Graduate Research Assistant, Department of Mining and Mineral Engineering, Virginia Tech, Blacksburg, VA

Summary of Accomplishment:

- Teaching

Lei Pan has taught several undergraduate-level and graduate-level courses at Michigan Tech. The classes he teaches include two core undergraduate chemical engineering courses, *i.e.* CM3110 Transport Phenomena and Unit Operation 1 and CM3230 Chemical Engineering Thermodynamics. In Fall 2021, a total of 73 undergraduate chemical engineering students are enrolled in his class across three sections. In addition, Dr. Pan teaches one core graduate-level chemical engineering course, *i.e.* CM5200 advanced thermodynamics, for the past four years. In addition, he has developed one new course, i.e. CM4510/CM5510 Interfacial Engineering, to complement the existing offerings at the university. He strives to bring teaching innovations into his classroom including the use of i-clickers in the class to increase students' participation and the use of experimental demonstrations in his classroom. Lei Pan received positive feedback from students and peer colleagues. In AY2021, his teaching evaluation was 4.5/5.0 on average.

Dr. Pan also led a student team on Li-ion battery recycling. This student team presented their sustainable battery recycling solutions at the 2018 USA Science and Engineering Festival in Washington DC. The team later received the EPA P3 Youth Council on Sustainable Science and Technology (YCOSST) Award by the American Institute of Chemical Engineer's Institute for Sustainability (AIChE-IfS) recognizing the project "that best employs sustainable practices, interdisciplinary collaborations, engineering principles and youth involvements, and whose design is simple enough to have a sustainable impact without requiring significant technical expertise of its users."

- Research

Dr. Pan's research has been focused on both basic and applied research to address grand challenges faced in the mining, recycling, and battery industries. His fundamental research has been focused on

thermodynamics (surface forces), kinetics and transport at air/liquid and solid/liquid interfaces. The outcome of his fundamental research is relevant to many applications including froth flotation, petroleum extraction, CO_2 storage, fruit cleaning, etc. These topics are currently supported by the National Science Foundation (NSF) and American Chemistry Society Petroleum Research Funds (ACS-PRF). Dr. Pan's applied research topics focus on 1) Li-ion battery recycling and 2) dust control and characterization. These two topics are supported by Department of Energy, NSF, Environmental Protection Agency, Michigan Economic Development Corporation, National Institute for Occupational Health (NIOSH), the Alpha foundation, Michigan Tech, and industry partners. Since 2017, he has received over $1.6M extend funding as the principal investigator (PI).

Since joining Michigan Tech in Fall 2016, Dr. Pan has published 16 peer-reviewed journal particles with several manuscripts under the review. According to Google Scholar, his total citation is 453 with an h-index of 11 since 2016. Dr. Pan has graduated two PhD students, and currently manages a research group consisted of two postdoctoral associates, 5-6 funded graduate students, and several undergraduate researchers. He gave three invited seminars and 8 presentations at the national and international conferences. His presentation titled "Dewatering of fine mineral tailings" at 2017 Society for Mining, Metallurgy, and Exploration annual conference received the Henry Krumb Lecturer award. The outcome of his research work was frequently appeared on traditional media (e.g. newspaper, etc) and social media.

- Services

At the department level, Dr. Pan serves on the graduate committee and computer committee. In addition, he serves as the department seminar coordinator since 2018. At the professional levels, Dr. Pan is actively serving his professional community (i.e. Society for Mining Metallurgy & Exploration SME) and representing Michigan Tech. Dr. Pan served as the chair of the Critical Mineral Section in 2018 and 2019. In addition, he served as the member (2019-2021) and vice chair (2022-2023) of the Mineral & Metallurgical Processing Division (MPD) Scholarship Committee, and a member of Accreditation & Curricular Issues Subcommittee (2019-2021). In addition, he served on the review panels for National Science Foundation (NSF), DOE Critical Materials Institute's Open Innovation Proposal Call, DOE Office of Technology Transitions Peer Review of Technology Commercialization Fund. Dr. Pan reviews 10+ manuscripts per year for various journals. He served as the external examiner on two PhD dissertations from Canada and Australia.

- Recent and Significant Publications/Exhibitions/Performances/Etc.

1. Folayan, T. O., Lipson, A. L., Durham, J. L., Pinegar, H., Liu, D., & Pan, L. (2021). Direct Recycling of Blended Cathode Materials by Froth Flotation. Energy Technology, 9(10), 2100468.
2. Zhan, R., Yang, Z., Bloom, I., & Pan, L. (2020). Significance of a Solid Electrolyte Interphase on Separation of Anode and Cathode Materials from Spent Li-Ion Batteries by Froth Flotation. ACS Sustainable Chemistry & Engineering, 9(1), 531-540.
3. Gao, Y., Jung, S., & Pan, L. (2020). Interaction and instability of air films between bituminous coal surfaces and surfactant droplets. Fuel, 274, 117839.
4. Gao, Y., & Pan, L. (2018). Measurement of instability of thin liquid films by synchronized tri-wavelength reflection interferometry microscope. Langmuir, 34(47), 14215-14225.
5. Zhan, R., Oldenburg, Z., & Pan, L. (2018). Recovery of active cathode materials from lithium-ion batteries using froth flotation. Sustainable Materials and Technologies, 17, e00062.

INFORMATION SHEET FOR BOARD OF TRUSTEES
Jeremy P. Bos
Michigan Technological University

Jeremy P. Bos, who is currently an assistant professor of electrical and computer engineering without tenure in the Department of Electrical and Computer Engineering in the College of Engineering, is being considered for promotion to associate professor of electrical and computer engineering with tenure in the Department of Electrical and Computer Engineering in the College of Engineering.

Academic Degrees:

Ph.D.	2012	Michigan Technological University, Houghton, MI
M.S.	2003	Villanova University, Villanova, PA
B.S.	2000	Michigan Technological University, Houghton, MI

Professional Record:

2015 – present	Assistant Professor (without tenure), Department of Electrical and Computer Engineering Michigan Technological University
2013-2015	NRC Postdoctoral Fellow, Air Force Research Laboratory, Kihei, HI
2012-2013	Adjuct Instructor, Department of Electrical and Computer Engineering, Michigan Technological University, Houghton, MI
2009-2012	Graduate Research Assistant, Department of Electrical and Computer Engineering, Michigan Technological University, Houghton, MI
2008	Graduate Teaching Assistant, Department of Electrical and Computer Engineering, Michigan Technological University, Houghton, MI
2007-2009	Senior Project Engineer, General Motors Product Development, Warren, MI
2003-2007	Multiple Engineering and Management Roles, Johnson Controls Automotive Interiors, Holland, MI
2000-2003	Senior Staff Antenna Engineer, Lockheed Martin Commercial Space Systems, Newtown, PA

Summary of Accomplishments:

- *Teaching*

Over his twelve years of teaching, Bos has developed two new courses: one at the undergraduate level and one at the graduate level. He has also taught twelve distinct courses spanning nearly the entirety of the electrical, computer, and robotics engineering curriculum from circuits to electronics, electromagnetics, communications, optics, programming, computer design, and robotics. Jeremy has been twice recognized for consistently high teaching evaluations. Since beginning his tenure-track appointment his teaching evaluations have averaged 4.08 and 4.34 when only in-person teaching is considered. In the fall he will develop another new course "Autonomous Vehicle Design" to support the department's Robotics Engineering degree.

- *Research/Scholarly Activity*

Bos' research focuses on using physical and statistical reasoning to make decisions to improve sensing and control systems operating in real world environments. The bulk of his published research in this area is related to imaging and beam control in atmospheric turbulence. In 2017 he was awarded the Air Force Office of Scientific Research's

Young Investigator Program award to explore the imaging science extreme anisoplanatism; when the isoplanatic angle is on the order of the diffraction-limit of an imaging system. This project also explores using light-field techniques to exploit angular diversity when imaging under these conditions.

The remainder of his research focuses on robust autonomous systems; those that can operate with high reliability and low variability in performance. Rather than develop brand new sensors and algorithms the aim of this research is evaluating the system performance envelope in the presence of noise factors like sensor degradation or inclement weather. This work has been funded by the US Army and Office of Naval Research as well as the Michigan Tech Research Excellence Fund.

My research projects have been supported by $6.7 million in total funding with budget responsibility for $1.6 million. Over my career I have produced over eighty works with over five hundred citations. This work represents my own efforts in addition to the four PhD and three MS thesis students.

- *Service*

Bos is currently advisor to Michigan Tech's GM/SAE AutoDrive Challenge competition team. In years 3 and 4 of the first iteration of this competition he led the team to second and third place overall out of 8 teams. At the department level he has served on the undergraduate and graduate program committees as well as search committees for faculty, staff, and chair both in and out of the department.

Bos also contributes actively to his professional societies currently serving on the SPIE IT committee after recently stepping down as chair of the Scholarship committee where he made recommendations for over $300,000 in awards annually. He is also a conference chair for conferences with both Optica (formerly OSA) and SPIE and on numerous conference program committees. Last year Bos was also re-appointed to a position as a topical editor for Optica's *Applied Optics* journal.

- *Recent and Significant Publications/Exhibitions/Performances/Etc.*

- Hedayati, E., Havens, T. C., & Bos, J. P. (2021, July). Light Field Compression by Residual CNN-Assisted JPEG. In *2021 International Joint Conference on Neural Networks (IJCNN)* (pp. 1-9). IEEE. (highly selective, peer-reviewed conference)
- Spike, N. D., Robinette, D., Bos, J., Chopp, D., & Kurup, A. (2021). Cross-Track-Compensated Pure Pursuit Control of an Autonomous Vehicle on Low-Friction Surfaces. *SAE International Journal of Connected and Automated Vehicles*, *4*(2).
- Beck, J. R., & Bos, J. P. (2020). Angular anisoplanatism in non-Kolmogorov turbulence over horizontal paths. *JOSA A*, *37*(12), 1937-1949.
- Bos, J. P., Gudimetla, V. R., & Schmidt, J. D. (2017). Differential piston phase variance in non-Kolmogorov atmospheres. *JOSA A*, *34*(8), 1433-1440.
- Bos, J. P., & Roggemann, M. C. (2012). Technique for simulating anisoplanatic image formation over long horizontal paths. *Optical Engineering*, *51*(10), 101704. (46 citations)
- Bos, J. P., Roggemann, M. C., & Gudimetla, V. R. (2015). Anisotropic non-Kolmogorov turbulence phase screens with variable orientation. *Applied optics*, *54*(8), 2039-2045. (44 citations)
- Kurup, A., & Bos, J. (2021). The Winter Adverse Driving dataSet (WADS)-sequence 37. (Downloaded nearly 3000 times since going online in October 2021)
- Beck, J., Bekins, C., & Bos, J. P. (2016, May). Wavepy: a python package for wave optics. In *Long-Range Imaging* (Vol. 9846, p. 984603). International Society for Optics and Photonics. (Paper describes an open-source wave optics simulation tool available for all researchers)

INFORMATION SHEET FOR BOARD OF TRUSTEES
ROOHOLLAH (RADWIN) ASKARI
Michigan Technological University

Roohollah (Radwin) Askari, who is currently an assistant professor of geophysics without tenure in the Department of Geological and Mining Engineering and Sciences (GMES) in the College of Engineering, is being considered for promotion to associate professor of geophysics with tenure in the Department of Geological and Mining Engineering and Sciences in the College of Engineering.

Academic Degrees:

Ph.D.	2013	University of Calgary, Geophysics, Calgary, Alberta, Canada
M.S.	2005	University of Tehran, Geophysics, Tehran, Iran
B.S.	2002	Hormozgan University, Physics, Bandar Abbas, Iran

Professional Record:

2015 – present	Assistant Professor (without tenure), Department of Geological and Mining Engineering and Sciences, Michigan Technological University
2014 – 2015	Post-Doctoral Fellow, Department of Chemical and Petroleum Engineering, University of Calgary, Calgary, Alberta, Canada
2009 – 2013	Graduate Research Assistant, Department of Geoscience, University of Calgary, Calgary, Alberta, Canada
2005 – 2009	Instructor, Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, Iran

Summary of Accomplishments:

- *Teaching*

Dr. Askari's teaching interests include exploration and environmental geophysics. Dr. Askari has earned student recognition for teaching his courses, including Reflection Seismology, Formation Evaluation and Petroleum Engineering, and Computational Geosciences. He also regularly offers Special Topics in Geophysics courses, including Geophysics of Unconventional Oil and Gas, and Seismic Petrophysics. In addition, Dr. Askari has developed a new senior-/graduate-level course on Environmental Geophysics and has substantially revised the Reflection Seismology and Formation Evaluation, and Petroleum Engineering courses. He has graduated one PhD and 13 MSc students and is currently advising one female PhD, two MSc, and two female undergraduate students. He also engages undergraduate students in his field studies to provide them with an opportunity to gain geophysical data acquisition experience.

- *Research/Scholarly Activity*

Dr. Askari is a nationally and internationally recognized expert in the field of geophysics. He has published 26 papers in highly ranked peer-reviewed journals. At Michigan Tech, he has developed a diverse research program in the areas of (1) fracture dynamics and its induced seismicity, (2) characterization of heat and fluid transport in porous media, and (3) near-surface geophysics, which enables him to apply for a variety of funding opportunities and develop interdisciplinary collaborations. He has secured $452,128 as PI in external funding from the National Science Foundation and $1,824,242 in industry software donations for his research and teaching. Dr. Askari has established an extensive collaboration network, including Lawrence Berkeley National Laboratory, Worcester Polytechnique Institute, the University of Calgary, and the China University of Petroleum. The Rock Physics Laboratory, founded by Dr. Askari, hosts a unique combination of state-of-the-art equipment, allowing him and his students to conduct fundamental

research on fluid transports in geological settings and their geophysical manifestations. Dr. Askari regularly serves as a referee for numerous peer-review journals and funding agencies.

- *Service*

Dr. Askari's service at Michigan Tech currently includes Faculty Senator At-large, GMES Graduate Assessment Committee, GMES Curriculum Committee on Course-Based and Accelerated MS Programs, and Library Liaison. He is also the faculty advisor of the Muslim Students Association (MSA) at Michigan Tech. His previous internal services include Alternate Senator, GMES Graduate Committee, and Faculty Advisor of Student Chapter of Society of Exploration Geophysicists. Dr. Askari's external professional service includes session chair at American Geophysical Union (AGU) and European Association of Geoscientists and Engineers (EAGE) annual meetings, and mentor at the AGU's Mentoring365 Program.

- *Recent and Significant Publications/Exhibitions/Performances/Etc.*

1. Cao, H., S. Nakagawa, and **R**. **Askari**. "Laboratory Measurements of the Impact of Fracture and Fluid Properties on the Propagation of the Krauklis Waves". In: *Journal of Geophysical Research: Solid Earth* (2021), 126.10, e2020JB021593.
2. Cao, H., E. Medici, and **R**. **Askari**. "Physical Modeling of Fluid-Filled Fractures Using the Dynamic Photoelasticity Technique". In: *Geophysics* 86.1 (2021), pp. T33-T43.
3. Cao, H., E. Medici, G. P. Waite, and **R**. **Askari**. "Effect of Geometry and Fluid Viscosity on Dynamics of Fluid-Filled Cracks: Insights from Analogue Experimental Observations". In: *Earth and Space Science* 7.11 (2020), e2020EA001333.
4. **Askari**, **R**., S. H. Hejazi, and M. Sahimi. "Thermal conduction in deforming isotropic and anisotropic granular porous media with rough grain surface". In: *Transport in Porous Media* 124.1 (2018), pp. 221-236.
5. Yang, Y., L. Tao, H. Yang, S. Iglauer, X. Wang, R. Askari, J. Yao, K. Zhang, L. Zhang, and H. Sun. "Stress Sensitivity of Fractured and Vuggy Carbonate: An X-Ray Computed Tomography Analysis". In: *Journal of Geophysical Research: Solid Earth* 125.3 (2020), e2019JB018759.
6. Jeng, J.-Y., **R**. **Askari**, and S. Chatterjee. "Correlation of near surface fractures with seismic radial anisotropy: An approach for near surface fracture identification". In: *Journal of Applied Geophysics* 173 (2020), p. 103925.
7. Chatterjee, S., **R**. **Askari**, J.-Y. Jeng, M. Abuzaied*, and A. Miltenberger. "Stochastic fracture simulation using pixel-based multiple-point geostatistics by integrating seismic radial anisotropy and well data: applications in two hydrology sites". In: *Environmental Earth Sciences* 79.23 (2020), pp. 1-19.
8. Esfahani, R. D. D., **R**. **Askari**, and A. Gholami. "Sparsity-promoting method to estimate the dispersion curve of surface-wave group velocity". In: *Geophysics* 84.1 (2019), pp. V33-V43.
9. Ikram, M. F., **R**. **Askari**, S. H. Hejazi, and M. Sahimi. "Effect of elastic deformation and rough grain surface on heat conduction in partially saturated granular porous media". In: *Water Resources Research* 54.11 (2018), pp. 9533-9548.
10. **Askari**, **R**., S. H. Hejazi, and M. Sahimi. "Effect of deformation on the thermal conductivity of granular porous media with rough grain surface". In: *Geophysical Research Letters* 44.16 (2017), pp. 8285-8293.

INFORMATION SHEET FOR BOARD OF TRUSTEES
Sajjad Bigham, Ph.D.
Michigan Technological University

Sajjad Bigham, who is currently an assistant professor without tenure in the Department of Mechanical Engineering – Engineering Mechanics in the College of Engineering, is being considered for promotion to associate professor with tenure in the Department of Mechanical Engineering – Engineering Mechanics in the College of Engineering.

Academic Degrees:

Ph.D.	2016	Mechanical Engineering, University of Florida, FL, USA
M.S.	2015	Mechanical Engineering, University of Florida, FL, USA
M.S.	2010	Mechanical Engineering, University of Tehran, Tehran, IRAN
B.S.	2007	Mechanical Engineering, University of Guilan, Guilan, IRAN

Professional Record:

2016 – present	Assistant Professor (without tenure), Department of Mechanical Engineering – Engineering Mechanics, Michigan Technological University
2012 – 2016	Graduate Research Assistant, Nanostructured Energy System (NES) Lab, University of Florida, Gainesville, FL
2010 – 2012	University Lecturer, Department of Mechanical Engineering, Lahijan Azad University (LAU), Guilan, Iran
2011 – 2012	R &D Engineer, Research and Development Center, Fan Niroo Company (www.fanniroo.com) (Water reuse and desalination industry),
2010 – 2011	R&D Engineer, Gas Research Division, Research Institute of Petroleum Industry (http://www.ripi.ir/), Tehran, Iran
2007-2010	Graduate Research Assistant, Laser Diagnostics Laboratory, University of Tehran, Tehran, Iran

Summary of Accomplishments:

- *Teaching*

Dr. Bigham has taught four different courses over the past four years at Michigan Tech, which includes the development of two new graduate courses. His student course evaluations have been consistently high (average 4.57 out of 5). While at Michigan Tech, Dr. Bigham developed "Phase-Change and Two-Phase Flows," a graduate-level course he has taught for the past three years, with student course evaluations scores of 4.62, 4.7, and 4.84 out of 5. For the past three years, he taught "Introductory Thermodynamics," which is offered at the undergraduate level, and received good course evaluations (4.12, 4.35, and 4.4 out of 5). He also developed "Principal of Energy Conversion – Renewable Energy" for which he is currently the course coordinator. He taught this course in spring 2019 and received very positive comments with a good student course evaluation (4.57 out of 5).

- *Research/Scholarly Activity*

Dr. Bigham's Energy eXploration Laboratory (Energy-X) at Michigan Tech is a multi/inter-disciplinary research laboratory focused on the scientific and engineering challenges that lay at the intersection of thermal-fluid, material, and energy sciences. Recognizing that energy is a key ingredient to all sectors of modern economies, the Energy-X lab exploits various experimental and analytical tools to understand and tackle impactful problems in Energy-related areas, including energy efficiency, thermal energy systems and associated interfacial transport and phase-change phenomena, thermal management for electronics

and electric vehicles, high-temperature thermal energy exchange/storage, high-salinity water desalination, and heat pump, HVAC (heating, ventilation, and air conditioning) and appliance technologies. The Energy-X lab's current research is supported by the Building and Solar Energy Technologies Offices (BTO and SETO) of DOE (Department of Energy), ARPA-E (Advanced Research Projects Agency-Energy), ORNL (Oak Ridge Natl. Lab.), and several industrial partners including Ford Motor Company ($3.9M in research funding as a PI).

Honorable mentions

- DOE Solar Desalination Prize (2nd phase), awarded by the Solar Energy Technologies Office (SETO) of the U.S. Department of Energy (DOE), April 2021.
- DOE Solar Desalination Prize for innovation (1st phase), awarded by the Solar Energy Technologies Office (SETO) of the U.S. Department of Energy (DOE), Oct. 2020.
- Outstanding honor student award for the academic achievement, University of Florida, FL.

- *Service*

Dr. Bigham has been active in providing services at multiple levels. At MTU, he has served on "Faculty hiring", "Staff hiring", "Faculty Development", "Seminar", and "Diversity" committees. At the national level, he is highly active in serving as a reviewer for multiple organizations (e.g., DOE, ARPA-E, NASA, NSF) and co/organizing technical sessions. At the international level, he is highly active in reviewing journal/conference papers (for more than 15 journals and conferences) and participating in technical ASHRAE and ASME committees.

- *Recent and Significant Publications/Exhibitions/Performances/Etc.*

Major research grants and contracts (total: $3,941,606)

- S. Bigham (PI), "Sorption-based ZLD Technology", American-made Challenges: Solar Desalination Prize, 2nd stage, DOE's Solar Energy Technologies Office, $350,000, April 2021.
- S. Bigham (PI), "Physics of crystallization in ZLD process", $24,900, Research Excellence Fund (REF), Michigan Technological University, Nov. 2020.
- S. Bigham (PI), "Sorption-based ZLD Technology", American-made Challenges: Solar Desalination Prize, 1st stage (Innovation), DOE's Solar Energy Technologies Office (SETO), $50,000, Oct. 2020.
- S. Bigham (PI), "High-Density SSiC 3D-Printed Lattices for Compact HTHP Aero-Engine Recuperators", $2,448,418, HITEMMP (High-Intensity Thermal Exchange through Materials and Manufacturing Processes) program, Advanced Research Project Agency – Energy (ARPA-E), 2020.
- S. Bigham (PI), "Next-Generation Desiccant-based Gas Clothes Dryer Systems", $918,288, BENEFIT (Buildings Energy Efficiency Frontiers & Innovation Technologies) program, DOE's Building Technologies Office (BTO), July. 2019.
- S. Bigham (PI), "High efficiency A/C system for future EVs and AVs", $150,000, Ford Motor Company, March 2018.

Sample recent publications:

- Umamaheswar Puttur, Masoud Ahmadi, Behzad Ahmadi, Sajjad Bigham, "A novel lung-inspired 3D-printed desiccant-coated heat exchanger", Energy Conversions and Management, 2021.
- Behnam Ahmadi, Masoud Ahmadi, Kashif Nawaz, Ayyoub M. Momen, Sajjad Bigham, "Performance Analysis and Limiting Parameters of Cross-flow Membrane-based Liquid-desiccant Air Dehumidifiers", International Journal of Refrigeration, Vol. 132, 2021.
- Sunil Kumar, Sajjad Bigham, "Multiple-effect Desiccant-based Zero Liquid Discharge Desalination Systems", Desalination, Volume 502, April 2021.
- Masoud Ahmadi, Kyle R. Gluesenkamp, Sajjad Bigham, "Energy-efficient Sorption-based Gas Clothes Dryer Systems", Energy Conversion and Management, Volume 230, February 2021.
- Masoud Ahmadi, Sajjad Bigham, "Gradient Wick Channels for Enhanced Flow Boiling HTC and Delayed CHF", International Journal of Heat and Mass Transfer, Volume 167, March 2021.

INFORMATION SHEET FOR BOARD OF TRUSTEES
Lesley Alexandra Morrison
Michigan Technological University

L. Alexandra Morrison, who is currently an assistant professor of philosophy without tenure in the Humanities Department in the College of Sciences and Arts, is being considered for promotion to associate professor of philosophy with tenure in the Humanities Department the College of Sciences and Arts.

Academic Degrees:

Ph.D.	2010	The University of Guelph, Department of Philosophy, Guelph, Ontario, Canada
M.A.	2000	The University of Toronto, Department of Philosophy, Toronto, Ontario, Canada
B.A.	1998	The University of Toronto, Department of Philosophy, Toronto, Ontario, Canada

Professional Record:

2015 – present	Assistant Professor (without tenure), Department of Humanities, Michigan Technological University
2011 – 2015	Visiting Assistant Professor, Department of Humanities, Michigan Technological University
2008 – 2011	Teaching Fellow, The Foundation Year Program, University of King's College, Halifax, Nova Scotia, Canada
2010 – 2011	Teaching Fellow, The Contemporary Studies Program, University of King's College, Halifax, Nova Scotia, Canada

Summary of Accomplishments:

Teaching

Dr. Morrison has taught over 850 students at Michigan Tech since Fall 2015. Her teaching scores are consistently strong, and at the undergraduate level she has taught Introduction to Philosophy, Logic and Critical Thinking, Ethical Theory & Moral Problems, Philosophy of Technology, Engineering Ethics, Feminist Philosophy, and Existentialism & Phenomenology. At the graduate level she has taught Continental Philosophy, Feminist Philosophy, Special Topics: Feminist Philosophy, and Special Topics in Critical Inquiry: Ethics: Politics and Power. Tech aspires to equip graduates with the interdisciplinary knowledge and critical skills to face the many social, political, and environmental challenges of the 21st century. Dr. Morrison's teaching contributes to this goal by encouraging students to cultivate the habits of inquiry necessary for becoming responsible citizens and ethical professionals. She cultivates an open, inclusive, and intellectually challenging learning environment. Dr. Morrison uses a variety of pedagogical techniques including expert use of new learning platforms to ensure seamless, scaffolded learning whether classes are face-to-face, remote or hybrid. While she works to improve her all of her classes, her innovations in engineering/STEM ethics pedagogy are notable and have become a productive area of scholarship, motivating most of her grant activity.

Research/Scholarly Activity

Since arriving at Tech Dr. Morrison's research record includes nine publications, seven of which being single-authored publications. She also has two forthcoming journal articles, both of which are collaborations with other scholars, as is another article-in-progress on ethics and public policy. These collaborative efforts mark an increasingly interdisciplinary focus in her research. As a scholar of phenomenological philosophy, philosophy of technology, and engineering ethics, Dr. Morrison's

This Information Sheet Should Not Exceed Two Pages in Length

research contributes to Michigan Tech's efforts to grapple with the human dimensions of science, engineering and technology. Building on the insight that human agency and identity are embodied and situated within contingent historical, social, and technological contexts, her research develops an account of ethical agency and social responsibility as manifested in technological systems and technologically mediated practices. Dr. Morrison's work critically challenges long-standing assumptions about ethical agency in traditional approaches to moral inquiry, including STEM ethics; namely, it shows how traditional approaches focus too narrowly on moments of decision and do not sufficiently attend to the challenge of designing technological systems that maximize space for ethical awareness, sensitivity, and responsibility. Dr. Morrison has presented at professional conferences ten times, has delivered five invited presentations, and served as a discussant/interviewer on three occasions. Her research has been recognized in multiple ways, including acceptance of her conference papers into highly competitive journals and philosophy conferences. Increasingly, she is being sought after as a reviewer for manuscripts and articles in the area of technology and engineering ethics in addition to her established scholarly areas in phenomenological philosophy. Her research in technology and engineering ethics has recently garnered invited engagements at two European Institutes: The Center for Ethics and Human Value in the Czech Republic and JUSTNORTH: The Arctic Justice Initiative at Uppsala University, Sweden. As her research area is diversifying, incorporating more contexts in which ethical decision-making is overlooked (namely high-tech, corporate, and public policy contexts) she will be embracing more interdisciplinary and transdisciplinary collaborations in ethics pedagogy. Her role as Co-PI on a large innovative convergence research collaboration NSF grant proposal (pending) with faculty in civil and environmental engineering is indicative of her expanding research horizon.

Service

Dr. Morrison is an active member of several international philosophical associations and has served on the Executive Board of the international Simone de Beauvoir Society. At Michigan Tech she serves on the University Senate, as Faculty Senator At-Large and member of the Senate Fringe Benefits Committee. She serves the Presidential TECH FORWARD Initiative as an Executive Committee Member and as a member of the Curriculum Committee for the *Institute of Policy, Ethics, and Culture* (IPEC) since 2019. Dr Morrison also serves as member of on two IDEA Hub (Education for the 21st Century) committees since 2019. At the Department level, since 2014, she has served as the Academic Advisor for the Ethics and Philosophy Minor and as a member of the Philosophy Committee. For the past two years she has been a member of the Rhetoric Theory and Culture (RTC) Graduate Program Steering Committee.

Recent and Significant Publications/Exhibitions/Performances/Etc

- "The Politics of Feeling: The Phenomenology of Affect in Sara Ahmed and Judith Butler" *Symposium: Canadian Journal of Continental Philosophy,* Vol. 24, No. 2 (Fall 2020): 144-167.
- "Situating Moral Agency: How Postphenomenology Can Benefit Engineering Ethics" *Science and Engineering Ethics*, Vol. 26 (2020): 1377-1401.
- "The Ethics of Authenticity: Heidegger on the Struggle to be What One is" *Anekaant: A Journal of Polysemic Thought*, No. 8 (Autumn 2018-19): 17-26.
- "Rescuing Politics from Liberalism: Butler and Mouffe on Affectivity and the Place of Ethics" *Philosophy and Social Criticism*, Vol. 44, Issue 5 (2018): 528-549.
- "Iterative Ethical Reasoning and Agile Software Development: Building a Bridge for Educators and Students in Computing Disciplines" co-author Charles Wallace. The *Institute of Electronics and Electronics Engineers* (IEEE) International Symposium on Technology and Society (ISTAS). November, 10 2021. (Conference Proceedings)
- "Values and Objectivity: Phenomenology and the Project of Integrating Science into Democracy" co-author Scott Marratto. *Philosophy and Social Criticism*, Accepted.

INFORMATION SHEET FOR BOARD OF TRUSTEES
Angie Carter
Michigan Technological University

Angie Carter, who is currently an assistant professor of environmental/energy justice without tenure in the Department of Social Sciences in the College of Sciences and Arts, is being considered for promotion to associate professor of environmental/energy justice with tenure in the Department of Social Sciences in the College of Sciences and Arts.

Academic Degrees:

Ph.D.	2015	Sociology & Sustainable Agriculture, Iowa State University, Ames, IA
M.S.	2012	Rural Sociology, Iowa State University, Ames, IA
M.F.A.	2004	Creative Writing, The University of Arizona, Tucson, AZ
B.A.	2001	English & French Literature, The University of Iowa, Iowa City, IA

Professional Record:

2017 – present	Assistant Professor (without tenure), Department of Social Sciences, College of Sciences & Arts, Michigan Technological University
2015-2017	Visiting Assistant Professor, Department of Sociology, Anthropology, and Social Welfare, Augustana College, Rock Island, IL
2010-2015	Graduate Research Assistant, Department of Sociology, Iowa State University, Ames, IA
2002-2004	Graduate Teaching Assistant, Department of English, University of Arizona, Tucson, AZ

Summary of Accomplishments:

Teaching

Dr. Carter teaches and advises undergraduate and graduate students, supporting the department's two graduate degree programs while also serving on College of Forest Resources and Environmental Science graduate committees and teaching core courses in the new Sustainability, Science & Society major. Her strong student evaluation record speaks to her commitment to translating social science to an engineering-oriented student body. She received commendation from the Provost's office for successful teaching during the COVID-19 pandemic in Spring 2020. Dr. Carter connects students to community partners through community-based research in and beyond the classroom, providing needed hands-on research training for students while supporting needed work in our neighboring communities. She plans to teach a core class in the department's new online graduate policy certificate. She currently advises/ co-advises 1 PhD, 3 MS, and 2 undergraduate students in research and has graduated 1 PhD student.

Research/Scholarly Activity

Dr. Carter is a rural sociologist studying the intersections of environmental, agricultural, and community sustainability through the lens of social justice. She has received $751,341 as Principal Investigator or Co-Principal Investigator (Co-PI) in research funding while at MTU; these projects have provided community-based research opportunities for 2 courses, 4 graduate students, and 7 undergraduate students. Her book proposal, *Rural Radicals: Women, Agriculture, and Power*, is under review at Island Press. The Rural Sociological Society, Dr. Carter's primary scholarly organization, awarded her an Early Career Research Award in 2020 to support her continued community-based research in collaboration with local food systems partners. She currently leads a regional food systems assessment funded also by awards from the Michigan Health Endowment Foundation, Michigan Department of Agriculture and Rural Development, MTU's Research Excellence Fund, and Portage Health Foundation. She is also co-PI on a Binational Science

Foundation study of policy lab networks and a National Science Foundation International Research Experiences for Students (NSF IRES) project studying agricultural adaptations among rural communities in El Salvador's dry corridor. Dr. Carter continues to build upon her early scholarly expertise in agriculture and conservation adoption through a recent study of strategic interventions in landowner-tenant relationships piloted in a USDA Sustainable Agriculture Research & Education (SARE) Partnership grant and recently published in *Natural Sciences Education*. Future research includes continuing to build upon her new research area studying regional food systems; she and partners will apply to the USDA Rural Development program to support regional food systems infrastructure research in 2023. Her articles have been published in the flagship journals of the Rural Sociological Society, International Association of Natural Resource Management, and the National Women Studies Association.

Service

Dr. Carter's service to the profession includes a 3-year term on the Rural Sociological Society (RSS) Publications Committee, a 1-year term on the Sociologists for Women in Society's Social Action Committee, and frequently reviewing for *Rural Sociology*, *Agriculture & Human Values*, *Society & Natural Resources,* and *Journal of Rural Studies*. Additionally, she is co-editing a forthcoming book, *Race and Racisms in Rural America,* with three of her RSS colleagues to be published in the RSS Rural Studies Series in 2023 and, with MTU colleague Dr. Richelle Winkler, co-edited a 2019 "Engaged Scholarship for Resilient Communities" *Social Sciences* special issue. At MTU, she is a proud Safe Place Ally and serves on the Food Insecurities Committee; past service includes the Diversity & Inclusion Tech Forward Task Force, Goal 8, Green Films, and Great Lakes Research Center Education & Research Committees. In the department, she serves on the Graduate Curriculum, Sustainability Science & Society major, and Marketing committees. Her scholarly service to the community includes the UP Food Exchange Policy and Steering Team and the Western UP Food Systems Collaborative steering team.

Selected Recent & Significant Publications

Carter, A. In publication. "Cultivating Community Resilience: Working in Solidarity in and Beyond Crisis." In *Gender, Food, and COVID-19: Global Stories of Harm and Hope.* C. Sachs, P. Castellanos, and A. Tickamyer, editors. New York: Routledge.

Wellstead, A., A. Gofen & **A. Carter.** 2021. "Policy innovation lab scholarship: past, present, and the future Introduction to the special issue on policy innovation labs." *Policy Design and Practice* 4(2): 193-211. DOI: 10.1080/25741292.2021.1940700.

Basche, A. and **A. Carter**. 2021. "'One Doesn't Work Without the Other': Training Future Agricultural Professionals in Landowner-Tenant Conservation Decision Making." *Natural Sciences Education* 50(1) DOI: 10.1002/nse2.20035.

Carter, A. 2020. "Women's Farm Organizations in North America: Protecting and Transforming Agricultural Power." Pp. 275-286 in *Routledge Handbook of Gender and Agriculture*. C. Sachs, L. Jensen, and K. Sexsmith, editors. New York: Routledge.

Burkett, E. (graduate student) and **A. Carter**. 2020. "'It's Not about the Fish': Women's Experiences in a Gendered Recreation Landscape." *Leisure Sciences: An Interdisciplinary Journal*. Online first. DOI: 10.1080/01490400.2020.1780522.

Carter, A. and A. Lazaro Lopez. 2019. "Rebranding the Farmer: Formula Story Revision and Masculine Symbolic Boundaries in U.S. Agriculture." *Feminist Foundations* 31(3): 25-50. DOI: 10.1353/ff.2019.0029.

Carter, A. 2019. "'We Don't Equal Even Just One Man': Gender and Social Control in Conservation Adoption." *Society & Natural Resources* 32(8): 893-910. DOI: 10.1080/08941920.2019.1584657.

INFORMATION SHEET FOR BOARD OF TRUSTEES
Carsten Külheim
Michigan Technological University

Carsten Külheim, who is currently an associate professor of forest genetics without tenure in the College of Forest Resources and Environmental Science, is being considered for promotion to associate professor of forest genetics with tenure in the College of Forest Resources and Environmental Science.

Academic Degrees:

Ph.D.	2005	Umeå University, Sweden
B.S.	2000	Umeå University, Sweden

Professional Record:

2018 – present	Associate Professor (without tenure), College of Forest Resources and Environmental Science, Michigan Technological University
2010 – 2018	Senior Research Fellow (equivalent to research assistant professor), The Australian National University
2008 – 2009	Research Fellow, The Australian National University
2006 – 2008	Postdoctoral Research Fellowship, University of British Columbia

Summary of Accomplishments:

- *Teaching*

  Dr. Külheim has designed and developed one 3-cr undergraduate course in forest genetics and one 3-cr graduate course in forest genetics. His teaching style is highly interactive and engages students throughout every single class, which is appreciated by his students and reflected by his teaching evaluations, which started with an average of 7-dimensions of 4.53 in spring 2019 and increased to his most recent class where the student evaluation was in the top 10% of all classes at MTU with an average of 7-dimension of 4.83 in spring 2021. To aid reaching students, he provides real-world applications where genetics has aided crop / forest improvements. In his graduate level class, students are conducting individual research projects that are related to their own research and help them develop skills they need to receive their graduate degrees. This year, they learn to remotely operate a high-performance computing cluster and learn computational biology relevant to forest genetics. Dr. Külheim strives to improve his teaching through courses and workshops and he makes good use of the early-term class survey to listen to and adjust his teaching to successfully reach as many students as possible.

- *Research/Scholarly Activity*

  In his career, Dr. Külheim has been awarded nearly $1 million in research grants as principal investigator as well as $930,000 in research grants as co-PI or key personnel. This includes $566,000 in six awarded research grants since he started at MTU in August 2018. Dr. Külheim has 64 publications, including 48 peer-reviewed international journal articles. Since 2015, he has published 32 peer-reviewed articles. His publications receive peer-recognition as evidenced by his citation statistics (h-index of 23, i10-index of 40 and over 3,400 citations), invitations to present at international workshops and conferences, and media attention, including TV and radio interviews. He has advised 15 undergraduate students, advised or co-advised 3 MS and 11 PhD students and he is currently advising two PhD and co-advising 2 MS students. Current active research grants and

proposals that are in work point towards ongoing scholarly outputs into the future. His research aligns well with the college strategic plan and teaching.

- *Service*

  Dr. Külheim provides service to his college, the University, and the scientific community, both nationally and internationally. College internal, he has served on one faculty hiring committee and he is the chair of the college diversity, equity, inclusion and sense of belonging committee. University service includes a two-year stint on the MTU Global and Community Engagement Group, which is part of the IDEA Hub; planning, organization and execution of the COVID-19 testing facility on MTU campus, as well as the MTU Flex academics task force. He provides expertise as a reviewer for grants from MTU internal sources, national and international funding agencies. He also serves as reviewer and editor for international journals. Dr. Külheim is a deputy coordinator for the IUFRO working party 2.04.06, Molecular Biology of Forest Trees.

- *Recent and Significant Publications/Exhibitions/Performances/Etc.*

  Since starting his faculty appointment at MTU, Dr. Külheim has published 12 refereed papers including two papers in the highly ranked journal New Phytologist (impact factor = 7.43), one paper in Plant Biotechnology journal (impact factor = 6.84) and one in Plant, Cell and Environment (impact factor = 6.17). Dr. Külheim was the lead author on two of these five publications as well as on six of the twelve publications since August 2018. In 2020 Dr. Külheim gave one NPR radio interview on the initiation of the MTU COVID-19 test lab and one channel 6 TV interview on the causes of fall colors in northern hardwood trees.

INFORMATION SHEET FOR BOARD OF TRUSTEES
FENGJING LIU
Michigan Technological University

Fengjing Liu, who is currently an associate professor of hydrology without tenure in the College of Forest Resources and Environmental Science, is being considered for promotion to associate professor of hydrology with tenure in the College of Forest Resources and Environmental Science.

Academic Degrees:

Ph.D.	2004	The University of Colorado at Boulder, Boulder, CO
M.S.	1987	Lanzhou Institute of Glaciology & Geocryology, Chinese Academy of Sciences, Lanzhou, Gansu, China
B.S.	1984	The Lanzhou University, Lanzhou, Gansu, China

Professional Record:

2017 – present	Associate Professor (without tenure), College of Forest Resources and Environmental Science, Michigan Technological University
2010 – 2017	Associate Professor (non-tenure track) (2016-2017)/Assistant Professor (non-tenure track) (2010-2016), Department of Agriculture and Environmental Science and Cooperative Research Program, Lincoln University, Jefferson City, MO
2004 – 2010	Post-Doctoral Researcher, School of Environmental Engineering and Sierra Nevada Research Institute, University of California, Merced, Merced, CA
1999 – 2004	Graduate Research and Teaching Assistant, Department of Geography and Institute of Arctic and Alpine Research, University of Colorado at Boulder, Boulder, CO
1987 – 1999	Research Professor (1998-1999)/Research Associate Professor (1995-1998)/Research Associate (1990-1995)/Research Assistant (1987-1989), Lanzhou Institute of Glaciology and Geocryology, Chinese Academy of Sciences, Lanzhou, Gansu, China

Summary of Accomplishments:

Dr. Liu has successfully developed a teaching and research program centered on forest hydrology and water quality in CFRES. The goal of his teaching and research is to find solutions and provide crucial information for maintaining ecosystem health, protecting natural resources, and serving our society in the face of a changing climate. His goal contributes to the University's mission to "create solutions for society's challenges by delivering action-based undergraduate and graduate education, discovering new knowledge through research, …" and the College's mission to "address the challenges in natural resource sustainability through education and training, novel research, …".

- *Teaching*

Dr. Liu has taught FW4370 Forest and Landscape Hydrology (3 credits - required for the BS in Forestry and Applied Ecology and Environmental Science) every spring, with a total of 92 students and an average 4.04/5.00 (±0.25) teaching evaluation score from the students for the past 4 years. Recognizing the importance of snow to the ecosystems in the Great Lakes region, Dr. Liu developed a Snow Hydrology (FW4371/5371) course for both graduate and undergraduate students and taught it in spring 2019, with 10 students and a mean score of 4.23/5.00 from students' evaluations. In facing a difficult teaching environment during the COVID-19 pandemic, he received student commendation through the Provost for successful teaching in Spring 2020. Prior to 2017, Dr. Liu taught Hydrology (ENV450/550) every spring semester starting in 2011 (average approval rating 87.40%-95.00%) and three more courses at Lincoln

University in Missouri (LU). Dr. Liu has chaired 1 PhD committee (MTU; defended on 11/15/2021) and 6 MS committees (4 at MTU since 2017, 2 graduated). He has served on 3 PhD committees (one at MTU, all graduated) and 7 MS committees (all graduated, 2 at MTU). He has also supervised 5 post-doctoral researchers (2 at MTU) and 7 undergraduate students for work study and research at his lab (2 at MTU).

- *Research/Scholarly Activity*

Dr. Liu has developed an extramurally funded research program in watershed and forest hydrology, with major contributions focusing on (1) streamflow generation at catchment scales; (2) water quality, geochemical and biogeochemical processes; and (3) impact of invasive pests on vegetation, ecohydrological processes, and ecosystem health. He has acquired nine external grants and contracts as PI or co-PI in the past 4 years from federal agencies, NSF, and Keweenaw Bay Indian Community, totaling $1.63 million. To engage in international research, he has developed a collaborative research program with Bhutanese scientists. Funded by the USAID program, the goal of this collaborative research is to help residents living in remote, rural areas in Bhutan secure their water sources used for drinking and irrigation in the face of climate change. He has also helped advisees (3 graduate and 1 undergraduate students) to develop external research proposals. Dr. Liu has published 50 peer-reviewed articles over his career, including eight in top hydrologic, geophysical and environmental journals, with a total citation of 1653, h-index of 20, and i10-index of 30 (Google Scholar). Nine articles have been published since 2017 at MTU and 25 articles since 2010 when he started an assistant professor position at Lincoln University. Additionally, nine manuscripts have been submitted or are currently under review, in revision, and in preparation, mostly led by advisees. He has given 17 invited talks, and 23 oral and 27 poster presentations mostly in collaboration with colleagues and advisees, at local, national and international conferences.

- *Service*

Since 2017, Dr. Liu has served on seven committees at the college and university levels, including Non-Departmental Faculty Search Committee (2017-2018), World Water Day Planning Committee (2018), International Program Committee (2017-2019), Graduate Study Committee (Chair, 2018-2020), Earn and Learn Committee (2020-present, Chair), Ford Center and Forest Advisory Committee (2020-present), and Information Technology Committee (starting fall 2021). Since 2017, he has served on NSF panelist (2019) and reviewed four NSF proposals and several more for funding agencies at university, state and national levels. He has been a frequent reviewer of manuscripts submitted to top hydrologic journals such as *Water Resources Research* and *Hydrology and the Earth System Science*, with a total of 27 reviews since 2017.

- *Recent and Significant Publications (* Graduate student advisee; ** Post-doctoral fellow)*

Zhou*, J., Y. Ding, J. Wu, **F. Liu**, and S. Wang (2021). Streamflow generation in semi-arid, glacier-covered, montane catchments in the Upper Shule River, Qilian Mountains, Northeastern Tibetan Plateau. *Hydrological Processes*, 35(8), e14276. https://doi.org/10.1002/hyp.14276.

Yang**, Y., Q. Wu, **F. Liu**, and H. Jin (2021). Spatial-temporal trends of hydrological transitions in thermokarst lakes on northeast Qinghai-Tibet Plateau based on stable isotopes. *Journal of Hydrology*, 597, doi: 10.1016/j.jhydrol.2021.126314.

Liu, F., R. N. Lerch, J. Yang, and G. Peters* (2020). Determining streamflow pathways using geochemical tracers in a claypan watershed. *Hydrological Processes*, 34 (11): 2494-2509. DOI: 10.1002/HYP.13743.

Ackerer**, J., C. Steefel, **F. Liu**, R. Bart, S. Khan, A. O'geen, C. Hunsaker, R. C. Bales (2020). Determining how Critical Zone structure constrains hydrogeochemical behavior of watersheds: learning from an elevation gradient in California's Sierra Nevada. *Frontiers in Water*, doi: 10.3389/frwa.2020.00023.

Liu, F., M. Conklin, and G. Shaw (2017). Insights into concentration-discharge and endmember mixing analyses in the mid Merced River basin. *Water Resources Research*, 53 (1): 832-850.

INFORMATION SHEET FOR BOARD OF TRUSTEES
Tatyana G. Karabencheva-Christova
Michigan Technological University

Tatyana G. Karabencheva-Christova, who is currently an associate professor of chemistry without tenure in the Department of Chemistry in the College of Sciences and Arts, is being considered for promotion to associate professor of chemistry with tenure in the Department of Chemistry in the College of Sciences and Arts.

Academic Degrees:

Ph.D.	2011	Bristol University, Bristol, UK
B.S.	2004	Sofia University, Sofia, Bulgaria

Professional Record:

2019 – present	Associate Professor (without tenure), Department of Chemistry, Michigan Technological University, Houghton, MI
2017 – 2019	Research Associate Professor, Department of Chemistry, Michigan Technological University, Houghton, MI
2012-2017	Associate Professor, Northumbria University, Newcastle-upon-Tyne, UK
2011-2012	Assistant Professor, Northumbria University, Newcastle-upon-Tyne, UK
2010-2013	Visiting Scholar and Marie Curie Fellow, Stanford University, CA, USA
2008-2010	Research Fellow, Autonomous University of Barcelona, Spain

Summary of Accomplishments:

- *Teaching*

Dr. Karabencheva-Christova has actively contributed to the undergraduate teaching mission of the Department of Chemistry by developing and delivering a new undergraduate course, "CH2510 - *Introduction to Computational Chemistry and Chemical Informatics*" at MTU. She also updated and delivered a graduate course in "*Biomolecular Modeling"* at MTU. Dr. Karabencheva-Christova led the effort to upgrade and improve (including name change) the B.S. program in "*Computational Chemistry and Chemical Informatics"* at MTU.

- *Research/Scholarly Activity*

Through various multilevel computational chemistry methods, Dr. Karabencheva-Christova's research reveals the mechanisms of reactions catalyzed by metal-containing enzymes. This research is essential for drug design, biomedicine, chemical biology, and bionanotechnology. In particular, Dr. Karabencheva-Christova's research focuses on computational chemistry studies of i) zinc-containing matrix metalloproteinases (MMPs); and ii) iron-dependent DNA and histone demethylases. Dysfunction of MMP enzymes leads to diseases such as various types of cancers, arthritis, tumor growth and invasion, and fibrosis, among many others, and therefore, they are targets for drug design. Dr. Karabencheva-Christova's studies provide insights into structure-function relationships and the mechanism of collagen hydrolysis by MMPs. This research is funded by NIH. Another direction of Tatyana's research explores the catalytic mechanisms of iron-dependent DNA and histone demethylases. These enzymes are involved in gene regulation and DNA repair and are targets for anticancer drug design. These studies provide new horizons for the design of better enzyme inhibitors that could be used as drugs. During her career, Tatyana has secured research grant funding from funding agencies such as the National Institutes of Health,

European Commission, the European Molecular Biology Organization, High-Performance Computing - Europe, the UK Overseas Scholarship, and the Brazilian State Funding Agencies)/The UK Academies Research Fellowship.

- *Service*

Tatyana reviewed research grants for NIH and served in an NIH study section--Molecular Structure and Function D. She reviews research articles for the American Chemical Society and the Royal Society of Chemistry journals and has edited nine scientific books and five journal special issues. Tatyana was a reviewer of research grants for the main funding agencies in the UK - the Biotechnology and Biological Sciences Research Council and the Engineering and the Physical Sciences Research Council. Tatyana is a member of the Graduate Program Committee at the Department of Chemistry at MTU where she contributes to ongoing efforts to update and improve graduate education in chemistry.

- *Recent and Significant Publications/Exhibitions/Performances/Etc.*

1. Ann Varghese, Shobhit S. Chaturvedi, Bella DiCastri, Emerald Meher, Gregg B. Fields, **Tatyana G. Karabencheva-Christova**, Effects of the Nature of the Metal Ion, Protein and Substrate on the Catalytic Center in Matrix Metalloproteinase-1: Insights from Multilevel MD, QM/MM and QM Studies, *ChemPhysChem*, (2021) ACCEPTED DOI: 10.1002/cphc.202100680 Selected for a Cover Image and a Cover Profile.
2. Ann Varghese, Shobhit S. Chaturvedi, Gregg B. Fields and **Tatyana G. Karabencheva-Christova**, A Synergy Between the Catalytic and Structural Zn(II) Ions and the Enzyme and Substrate Dynamics Underlies the Structure-Function Relationships of Matrix Metalloproteinase Collagenolysis, *Journal of Biological Inorganic Chemistry*, 26, 583-597 (2021).
3. Sodiq O. Waheed, Shobhit S. Chaturvedi, **Tatyana G. Karabencheva-Christova,** and Christo Z. Christov, Catalytic Mechanism of Human Ten-Eleven Translocation -2 (TET2) Enzyme: Effects of Conformational Changes, Electric Field and Mutations, *ACS Catalysis,* 11, 3877-3890 (2021).
4. Rajeev Ramanan, Shobhit S. Chaturvedi, Nicolai Lehnert, Christopher J. Schofield, **Tatyana G. Karabencheva-Christova** and Christo Z. Christov, Catalysis by the JmjC Histone Demethylase KDM4A Integrates Substrate Dynamics, Correlated Motions and Molecular Orbital Control, *Chemical Science*, 11, 9950 – 9961 (2020).
5. Sodiq O. Waheed, Rajeev Ramanan, Shobhit S. Chaturvedi, Nicolai Lehnert, Christopher J. Schofield, Christo Z. Christov and **Tatyana G. Karabencheva-Christova,** Role of Structural Dynamics in Selectivity and Mechanism of Non-heme Fe(II) and 2-Oxoglutarate-Dependent Oxygenases Involved in DNA Repair, *ACS Central Science*, 6, 5, 795–814, (2020). Selected for supplementary cover image: *https://pubs.acs.org/toc/acscii/6/5*
6. Shobhit S. Chaturvedi, Rajeev Ramanan, Nicolai Lehnert, Christopher J. Schofield, **Tatyana G. Karabencheva-Christova**, and Christo Z. Christov, Catalysis by the Non-Heme Iron(II) Histone Demethylase PHF8 Involves Iron Center Rearrangement and Conformational Modulation of Substrate Orientation, *ACS Catalysis*, 10, 1195-1209 (2020).
7. Shobhit S. Chaturvedi, Rajeev Ramanan, Sodiq O. Waheed, Jon Ainsley, Martin Evison, Jennifer M. Ames, Christopher J. Schofield, **Tatyana G. Karabencheva-Christova** and Christo Z. Christov, Conformational Dynamics Underlies Different Functions of Human KDM7 Histone Demethylases, *Chemistry-A European Journal*, 25, 5422-5426 (2019).
8. Sodiq O. Waheed, Rajeev Ramanan, Shobhit S. Chaturvedi, Jon Ainsley, Martin Evison, Jennifer M. Ames, Christopher J. Schofield, Christo Z. Christov and **Tatyana G. Karabencheva-Christova**, Conformational Flexibility Influences Structure–Function Relationships in Nucleic Acid N-methyl Demethylases, *Organic & Biomolecular Chemistry*, 17, 2223-2231 (2019).

VIII-D. PROMOTIONS

The policy for granting promotion to faculty members requires that the process begin with deliberations in the candidate's home unit and proceed through additional review at multiple levels. Recommendations are reviewed by the provost, and the provost makes a recommendation to the president of the University. The president has accepted the provost's recommendation regarding promotion for the candidates listed in this section.

RECOMMENDATION: It is recommended that the Board of Trustees approves the appointments involving promotion listed in this section.

Michigan Tech

Office Memo

Office of the Provost and
Senior Vice President for Academic Affairs

Phone: (906) 487-2440
Fax: (906) 487-2935

TO: Richard Koubek, President

FROM: Jacqueline E. Huntoon, Provost & Senior Vice President for Academic Affairs

Jacqueline E Huntoon

DATE: March 28, 2022

SUBJECT: Promotion Recommendations

In accordance with Board of Trustees Policy 6.4, Academic Tenure and Promotion, the following faculty members have been recommended for promotion. I have reviewed and support these recommendations and request that the Board of Trustees be asked to approve them at their April 29, 2022 meeting. If approved, the promotions will be effective August 15, 2022.

Promotion from Associate Professor with Tenure to Professor with Tenure

Manish Srivastava	College of Business
Chee-Wooi Ten	Electrical & Computer Engineering
Molly Cavaleri	College of Forest Resources & Env. Sci.
Tarun Dam	Chemistry
Shane Mueller	Cognitive & Learning Sciences
Qinghui Chen	Kinesiology & Integrative Physiology
Ramy El-Ganainy	Physics
Jared Anderson	Visual & Performing Arts
Patricia Helsel	Visual & Performing Arts
Joel Neves	Visual & Performing Arts

APPROVED:

Richard Koubek, President — 3.30.22 Date

INFORMATION SHEET FOR BOARD OF TRUSTEES
MANISH K. SRIVASTAVA
Michigan Technological University

Manish K. Srivastava, who is currently an associate professor of strategic management and innovation and the David L. and Marilyn Bernard Faculty Fellow in the College of Business, is being considered for promotion to professor of strategic management and innovation in the College of Business.

Academic Degrees:

Ph.D.	2007	Strategic Management, Virginia Polytechnic Institute and State University, VA
M.B.A.	1998	Finance and Marketing, Motilal Nehru National Institute of Technology (Allahabad University), India
B.S.	1995	Civil Engineering, National Institute of Technology (University of Burdwan), India

Professional Record:

2015 – present	Associate Professor, Michigan Technological University
2017 – 2018	Visiting Professor, Virginia Tech
2014 – 2017	Senior Lecturer, Umea University, Sweden (Part time)
2007 – 2015	Assistant Professor, Michigan Technological University
2003 – 2007	Instructor, Virginia Tech
1999 – 2002	Academic Associate, Indian Institute of Management, Ahmedabad
1995 –1996	Management Trainee, Bridge and Roof Company of India Ltd.

Summary of Accomplishments:

- *Teaching*

Dr. Srivastava is considered an expert in case method of teaching which is an effective teaching method for experiential learning in business education. He also completed a two-day seminar from the Harvard Business School in teaching using case method. He has taught strategic management, management of technology and innovation, and international management at the undergraduate and graduate levels at Michigan Tech. He has also taught strategic management at the doctoral level at Virginia Tech. In terms of student skill sets and knowledge base, he has helped students in acquiring knowledge and skills related to developing and analyzing business models, technology and innovation strategies, firm valuation in mergers and acquisitions, and international entry and growth strategies. He has consistently tried using new cases, new articles, and incorporating different teaching methods (e.g., technology simulations). Here is a student comment that was submitted as part of course evaluations, which provides qualitative evidence of the quality of teaching and offers some insights in terms of his teaching style: "[Y]ou care more about your student's learning than any other professor I have had in both the College of Business and my undergraduate department. Throughout the semester, you were always willing to stay late after class, make time in your schedule, and respond quickly to our emails, answering any question we had. Your willingness to make time for your students is unmatched and very much appreciated! You are also a great professor because you challenge your students. Those who care about their education, including me, learned so much from your teaching style because we were pushed. Students who are unwilling to rise to that challenge may feel upset, but those who are willing to learn gain so much from your class! No matter what, keep challenging your students. I have always wanted to go into business, but having suffered from severe anxiety for years, I feared I would not be able to confidently make business decisions in the real world. After taking your class and watching my personal growth throughout the semester as you pushed and challenged me, I know I can succeed in this field and no longer worry about my ability to make important decisions. Thank you for giving that gift to me!"

- *Research/Scholarly Activity*

Dr. Srivastava has published in prestigious management journals such as Academy of Management Journal (#2 in Strategy and Management[1]), Strategic Management Journal (#3 in Strategy and Management and Journal of Management (#5 in Strategy and Management). The primary goal of his research is to advance knowledge of how firms gain technological innovation based competitive advantage. He focuses on understanding how firms develop knowledge-based capabilities, leverage internal and external knowledge-based resources, collaborate (and compete) effectively with their strategic alliance partners in their pursuit of significant technological innovations. Technological innovations generated in a sustained manner not only provide more durable competitive advantages to firms but also provide a highly valuable growth engine to the society at large.

His research has been influential and has contributed to more than 25% of the citations received by the College of Business faculty publications during the last five years. He has been invited by the Government of India as part of their flagship scheme Global Initiative for Academic Network (GIAN). Under this scheme they invite leading scholars from around the world to conduct workshops and teach courses. He has won Virginia Tech's Faculty Research Excellence Award, and his research has won the Best Paper Award at the Pan IIM World Management Conference among other awards. At its core his research focuses on technology and innovation strategies of firms. Consistent with his research focus, his teaching focuses on management of technology, innovation, and overall strategies of growth and development. His educational and research background allows him to effectively integrate technology and business and various disciplines of business such as finance, marketing, and management.

- *Service*

Dr. Srivastava is currently serving his third consecutive three-year term on the editorial board of a prestigious management journal, Journal of Management, and has started his first term on the editorial board of Long Range Planning, another leading management journal. He has also served as guest editor for Long Range Planning, and very actively reviews for top management journals. He has been invited by several universities (e.g., Umea University, Virginia Tech, Washington State University, Indian Institute of Management Lucknow) to conduct workshops for their faculty and doctoral students on econometric methods. He has led to efforts to develop the Entrepreneurship, innovation and technology minor to be offered by the College of Business. He has served on several college and university committees in different capacities. As MBA Committee Chair, he played a very active role in marketing and promotion of our MBA program and curriculum redesign. The MBA Ambassador program that he started has been a very successful one. It contributed significantly to the growth of our MBA program. He has also actively served as a member on the university committee- Advanced Materials and Manufacturing Tech Forward.

- *Recent and Significant Publications/Exhibitions/Performances/Etc.*

Here are some notable recent publications:

1. Bengtsson, M., T. Raza-Ullah, Srivastava, M.K. (2020). " Looking Different Vs Thinking Differently: Impact of TMT Diversity on Coopetition Capability ". *Long Range Planning*
2. Czakon, W., Srivastava, M. K., Le Roy, F., & Gnyawali, D. (2020). "Coopetition strategies: Critical issues and research directions." Long Range Planning
3. Yayavaram, S., Srivastava, M. K., & Sarkar, M. B. (2018). Role of search for domain knowledge and architectural knowledge in alliance partner selection. Strategic Management Journal
4. Song, Y., Gnyawali, D. R., Srivastava, M. K., & Asgari, E. (2018). In Search of Precision in Absorptive Capacity Research: A Synthesis of the Literature and Consolidation of Findings. Journal of Management

[1] https://www.scimagojr.com/journalrank.php?category=1408

INFORMATION SHEET FOR BOARD OF TRUSTEES
CHEE-WOOI TEN
Michigan Technological University

Chee-Wooi Ten, who is currently a tenured associate professor of electrical engineering in the Department of Electrical and Computer Engineering in the College of Engineering, is being considered for promotion to the full professor in the Department of Electrical and Computer Engineering in the College of Engineering.

Academic Degrees:

Ph.D.	2009	University College Dublin, Ireland
M.S.	2001	Iowa State University, Ames, IA, USA
B.S.	2003	Iowa State University, Ames, IA, USA

Professional Record:

2016 – present	Associate Professor of Electrical Engineering, Michigan Technological University, Houghton, MI
2021 - present	Affiliated Associate Professor of Applied Computing, Michigan Technological University, Houghton, MI
2018 - 2019	Visiting Faculty, Carnegie Mellon University, Pittsburgh, PA
2016 - 2017	Industrial Security Architect, Waterfall Security Solutions, Rosh Ha'ayin
2010 - 2016	Assistant Professor of Electrical Engineering, Michigan Technological University, Houghton, MI
2002 - 2006	Application Engineer, Siemens Energy Management and Information System (SEMIS), Singapore
2000 - 2000	Engineering summer intern, MidAmerican Energy Company, Urbandale, IA

Summary of Accomplishments:

- *Teaching*

Dr. Ten's teaching philosophy is to utilize classroom technologies for ongoing engagement and assessment with students. His belief of academic success in teaching is to measure students' continued improvements. He teaches and mentors both undergraduate and graduate students. He has demonstrated gradual improvements in pedagogical innovation over the past decade by utilizing classroom technologies. Most recently, he has received student commendation through Provost Office for the successful teaching during the COVID-19 pandemic in Spring 2020. In the most recent semester, he also received the top 10% instructor evaluation for Spring 2021 from Provost Office. Innovations include introducing campus-wide cyberinfrastructure to graduate-level courses such as "distribution engineering" and "power system dynamics and stability," allowing students to expose physics-based theory with practice. Such promotion relating real-world events would improve class engagement and learning. His passion in teaching online students is to implement asynchronous instruction with shorter video clips to conceptualize an idea with any new subject. With the lower attention span in a classroom these days, the students would be able to concentrate more with small stake rewarding mechanism in the class, motivating them be prepared for the bigger stake assessment. The design of Dr. Ten's hybrid (synchronous and asynchronous) instruction ensures our student populations be better prepared for the challenges in the 21st century.

This Information Sheet Should Not Exceed Two Pages in Length

- *Research/Scholarly Activity*

The surge of recent ransomware incidents has shown the plausibility of affecting operational decision and supply chains, through the spread of malware. Hence, the mandate on compliance and enforcement by North American Electric Reliability Corporation (NERC) and Federal Energy Regulatory Commission (FERC) may require extensive adaptation in best practice. Dr. Ten's primary research interest focuses on extreme contingency paradigm and its integration in power cybersecurity framework. In particularly, he is interested in establishing an actuarial framework relating cyberinfrastructure of power control network with additional supporting infrastructure for exchanging risks between utilities and insurance companies. Dr. Ten has demonstrated track records and impact in the fundamental research of cyber-physical systems where evaluation of residual risks of cyber system has been extensively identified and modeled. Considering power infrastructure is a nation's critical infrastructure, such innovation in research and involvement are ongoing with stakeholder community of vendors, electric utilities, and national labs. Dr. Ten has also proven his independence to attract external funding from federal competitive agencies such as National Science Foundation and US Department of Energy. All scholarly publications pertaining to the theme of this research has shown that this is a national interest. All peer-reviewed publications are co-authored with doctoral or master's students as well as collaborators who work with Dr. Ten on the projects together. As shown in Google Scholar, his international exposure has been evident by his steady growth of the number of citations in this realm. Such recognition constitutes a solid groundwork of professional networking and he has been followed by his peer researchers from around the world. Dr. Ten also has established his research demonstration testbed at Michigan Tech where he has been investing his time and efforts to analyze the Tech's electrical distribution grid and utilize such data and phenomena for establishing research studies. Great work of research would have a well-balanced theory and practice. He led a proposal to join Power Systems Engineering Research Center (PSERC). Sustaining the ecosystem of research with industry oversight is an essence of cutting research. As a site director for PSERC, he leads the efforts to work with PSERC and nexus all power-related faculty across Colleges at Michigan Tech.

- *Service*

Dr. Ten's service to the University and the professional society has been extensive. As an electrical engineer, he understands involvement with Institute of Electrical and Electronics Engineers (IEEE) society is crucial in connecting with other international researchers. He is currently a senator for his MTU home department and actively advocating the voice of his department's best interests. He was also an associate editor for IEEE Transactions on Smart Grid, a well-established premier journal which has an impact factor of 8.267. He is research active and has been pro-active in reviewing manuscripts invited by other editors from IEEE Transactions. He is a Director for Tech's Institute of Computing and Cybersystem (ICC) Cyber-Physical Systems (CPS), a position where he has to lead a cohort of research-active faculty members from different departments and positioning for strategic collaboration with tangential research ideas. Nationally, he is the PSERC Site Director for Michigan Tech. He involves in executive committee (EC) to strategically work with other EC members in anticipating and preparing for new funding opportunities. He often reaches out to industry community and presents his work of research to seek for their inputs.

- *Recent and Selected Significant Publications/Exhibitions/Performances/Etc.*

1. D. A. Aponte-Roa, C. -W. Ten and W. W. Weaver, "Estimation of Affected Customers and Load Loss Under Wind Storms in the Caribbean Region," in IEEE Systems Journal.
2. P. Lau, L. Wang, Z. Liu, W. Wei and C. -W. Ten, "A Coalitional Cyber-Insurance Design Considering Power System Reliability and Cyber Vulnerability," in IEEE Transactions on Power Systems, vol. 36, no. 6, pp. 5512-5524, Nov. 2021.
3. Z. Liu, W. Wei, L. Wang, C. -W. Ten and Y. Rho, "An Actuarial Framework for Power System Reliability Considering Cybersecurity Threats," in IEEE Transactions on Power Systems, vol. 36, no. 2, pp. 851-864, March 2021.

INFORMATION SHEET FOR BOARD OF TRUSTEES
Molly A. Cavaleri
Michigan Technological University

Molly A. Cavaleri, who is currently an associate professor of tree physiology with tenure in the College of Forest Resources and Environmental Science, is being considered for promotion to full professor of tree physiology with tenure in the College of Forest Resources and Environmental Science.

Academic Degrees:

Ph.D.	2007	Colorado State University, Fort Collins, CO
M.S.	2002	University of Minnesota, St. Paul, MN
B.S.	1997	University of Wisconsin, Madison, WI

Professional Record:

2016–present	Associate Professor of Tree Physiology, College of Forest Resources and Environmental Science, Michigan Technological University
2009–2016	Assistant Professor of Tree Physiology, School of Forest Resources and Environmental Science, Michigan Technological University
2007–2009	Postdoctoral Fellow, Botany Department, University of Hawai'i at Mānoa, Honolulu, HI
2003–2007	Graduate Research Assistant (Ph.D.), Graduate Degree Program in Ecology, Colorado State University, Fort Collins, CO
2000–2002	Graduate Research Assistant (M.S.), Department of Forest Resources, University of Minnesota, St. Paul, MN

Summary of Accomplishments:

- *Teaching*

Dr. Cavaleri is a member of the Academy of Teaching Excellence, was a finalist for the Distinguished Teaching Award in the Associate Professor/Professor category in 2019, and in 2015 received the Dean's Teaching Showcase Award. She received special recognition from the Provost for doing an excellent job of transitioning to remote learning during the COVID-19 shutdown in spring 2020, and most recently was recognized as rated in the top 10% of teachers university-wide in both fall 2020 and spring 2021. Her teaching interests include tree physiology theory and methods, and graduate student professional development. She currently teaches an upper-level undergraduate Tree Physiology course every spring, which introduces concepts of tree structure, growth, development, and function, within the context of climate change. She also alternates between two graduate-level courses in fall semesters; Forest Ecophysiology, an exploration of literature on the mechanistic aspects of tree and forest ecosystem function; and Measuring Plants and their Environment, a laboratory-based hands-on exploration of ecophysiology methods. Each fall she also teaches the graduate-level the Distinguished Ecologist Lecture Series course, where students read and discuss papers of three visiting speakers and interact with the visitors in both formal and informal settings. For all three graduate courses, she focuses on professional development, including mentoring the students in the creation and delivery of lab and lecture materials, peer-reviewing journal articles, and assessing one another's work. This active learning approach results in deeper understanding of complex topics and also a better appreciation for the art of teaching itself.

- *Research/Scholarly Activity*

Dr. Cavaleri investigates the structure and function of forest canopies and the effects of climate change and disturbance on tropical and temperate forests. She is one of three co-principal investigators of an

internationally-recognized tropical forest warming study, the Tropical Responses to Altered Climate Experiment (TRACE) in Puerto Rico. She studies the effects of warming and hurricanes on the capacity of trees to continue to take up carbon dioxide from the atmosphere. To continue this work, Dr. Cavaleri was recently funded by a 2021-2024 Department of Energy grant ($1M total; $660K to Michigan Tech), which will bring together nearly 6 years of above and belowground TRACE data into an Earth System Modeling framework. In Michigan, she co-leads the Oak Project, investigating climate change adaptation and acclimation of two oak species across their ranges and in two common gardens in northern and southern Michigan. Currently, one PhD and two MS students are supported on this project through teaching assistantships and USDA McIntire Stennis funds, and Dr. Cavaleri is actively writing grants to support this work with colleagues at Michigan Tech. Dr. Cavaleri took a three-month sabbatical at Kobe University in Kobe, Japan in spring 2019. She is currently working with her sabbatical host to investigate the potential for populations of Japanese beech from different regions across Japan to acclimate to a changing climate. She has garnered a total of $4.6M research dollars, $4.3M of this from external federal sponsors, $2.2M of which came to Michigan Tech. She has published 36 peer-reviewed papers and one book chapter, has graduated three PhD and five MS students, and is currently supervising two PhD and two MS students. Dr. Cavaleri is an active member of the Ecosystem Science Center.

- *Service*

Since fall 2020, Dr. Cavaleri has served as the Director of Graduate Studies for the College of Forest Resources and Environmental Science (CFRES). Within CFRES, she currently serves on the Graduate Studies Committee, the College Leadership Council, was a past member of the Curriculum and Promotion and Tenure committees, and has served on seven faculty and staff search committees since 2012. At the University level, she is currently a member of the Graduate Faculty Council, the Research Advisory Council, served as a mentor in three Early Career Management committees, and served for four years on the Graduate Dean's Advisory Panel. Dr. Cavaleri is currently a member of the editorial board for the journal *Tree Physiology*, and also serves as a member of the advisory board for the SPRUCE project, a Department of Energy long-term experiment. Dr. Cavaleri served as the elected co-secretary of the Physiological Section of the Ecological Society of America in 2013-2015, and is an active member to date. She also is an active member of the Association for Tropical Biology and Conservation and the American Geophysical Union. Dr. Cavaleri regularly serves as a manuscript, proposal, international dissertation, and tenure/ promotion referee, and has served on two National Science Foundation proposal review panels.

- *Recent and Significant Publications (*graduate student; †undergraduate student co-authors)*

Miller BD†, Carter KC*, Reed SC, Wood TE, and **Cavaleri MA**. (2021). Only sun-lit leaves of the uppermost canopy exceed both air temperature and photosynthetic thermal optima in a wet tropical forest. *Agricultural and Forest Meteorology*, 301–302:108347.

Carter KC*, Wood TE, Reed SC, Butts KM†, and **Cavaleri MA.** (2021) Experimental warming across a tropical forest canopy height gradient reveals minimal photosynthetic and respiratory acclimation. *Plant, Cell & Environment*. 44: 2879-2897.

Yaffar D*, Wood TE, Reed CS, Branoff BL, **Cavaleri MA**, and Norby RJ. (2021) Experimental warming and its legacy effects on root dynamics following two hurricane disturbances in a wet tropical forest. *Global Change Biology*, 27: 6423-6435.

Cavaleri MA. (2020). Cold-blooded forests in a warming world. *New Phytologist*, 228: 1455-1457.

Bachelot B, Alonso-Rodríguez AM, Aldrich-Wolfe L, **Cavaleri MA,** Reed SC, Wood TE. (2020). Altered climate leads to positive density-dependent feedbacks in a tropical rainforest. *Global Change Biology*, 26: 3417-3428.

INFORMATION SHEET FOR BOARD OF TRUSTEES
Tarun K. Dam
Michigan Technological University

Tarun K. Dam, who is currently an associate professor of chemistry with tenure in the Department of Chemistry in the College of Science and Arts, is being considered for promotion to professor of chemistry with tenure in the Department of Chemistry in the College of Science and Arts.

Academic Degrees:

Ph. D.	1994	University of Calcutta, Calcutta, India
Post-doc	1996-2000	Albert Einstein College of Medicine, NY

Professional Record:

2016 – present	Associate Professor (with tenure), Department of Chemistry, Michigan Technological University
2010 – 2016	Assistant Professor (without tenure), Department of Chemistry, Michigan Technological University
2000-2010	Research Faculty, Albert Einstein College of Medicine, NY

Summary of Accomplishments:

- *Teaching*

Dr. Dam is a winner of the Distinguished Teaching Award and a two-time finalist for the same award. He is a member of the Academy of Teaching Excellence. His name consistently appears among the top 10% teachers of Michigan Tech. He is a National Academies Education Fellow in Life Science. Dr. Dam teaches Biochemistry, Chemistry, Pharmaceutical Chemistry and Glycobiology. He also teaches a graduate-level seminar course. His courses are taken by undergraduate and graduate-level students from the College of Science and Arts, College of Engineering and College of Forest Resources. He developed and implemented two new graduate-level courses in Biochemistry, modified an existing Pharmaceutical chemistry course and redesigned a seminar course. Dr. Dam designed a teaching tool named "Continuous and Rapid Testing (CaRT) that he uses in his classrooms. He published CaRT in "The Teaching Professor". As a part of one of his NSF-funded research grants, Dr. Dam started an initiative that he named as "From Bench to Blackboard". Through the initiative, he brings his discoveries from his research lab to his classrooms to share with his students.

Research/Scholarly Activity

Dr. Dam is a highly cited scientist, who is known internationally for his original and ground-breaking research. Dr. Dam publishes in the leading journals in his area and has received multiple invitations to present his group's work at high-profile international conferences. His primary area of research is Glycobiology, an area termed as the "final frontier of biomedical science" because of its depth, significance and relevance to human health. Dr. Dam brought Glycobiology to Michigan Tech and established a nationally visible research lab in the Chemistry Department. His discoveries at Michigan Tech are relevant for better drug design, accurate detection of cancer and rapid identification of clinically significant proteins. His lab demonstrated a surprising characteristic of a tumor-associated protein that casts new light on its role in cancer, cardiovascular disease, nerve development and the pathogenesis of coronavirus. Dr. Dam's group has also discovered bioactive molecules from plants that have huge clinical potential. His lab is currently working on three high-impact research projects and

using the data from those projects to support proposals to National Institute of Health (NIH) and National Science Foundation (NSF). Research in his lab has been supported by NSF, the Pruett Family, the Songer Family and Michigan Tech Research Excellence Funds. He has received $420,965 (as a PI) and $135,669 (as a Co-PI) from NSF. Dr. Dam received Young Scientist Award and "Bhakta Rath Research Award" for his contributions to science. His research was featured on the cover of the journal "Current Protocols in Protein Science" and he received invitations from international scientific communities to write research articles and book chapters. Recently, one of the top scientific publishing houses (John Wiley) invited him to work on a book. Dr. Dam has graduated three Ph. D. and two MS students and is currently advising two Ph.D. and two MS students. Graduate students from his lab have received awards and recognition at national conferences and on-campus competitions. In addition to his graduate students, Dr. Dam consistently mentors undergraduate researchers. For his contributions to mentoring, he was given the "Exceptional Graduate Faculty Mentor Award". Dr. Dam made (and will continue to make) significant contributions to human health research. Therefore, his research and his contributions to graduate education are aligned with the strategic plans of the Chemistry Department and Michigan Tech's health research initiatives.

- *Service*

Dr. Dam serves the Director of the inter-departmental Biochemistry and Molecular Biology (BMB) graduate program of Michigan Tech. As the Director, he has expanded the BMB program by adding faculty members from different departments and schools. He is soliciting funds to establish fellowships to support BMB students. He has served as a core faculty of this program from its beginning. Beyond the university, Dr. Dam has been selected as the Vice President of S.D. Marine Biological Research Institute, Sagar Island, India. This not-for-profit Institute is focused on coastal and marine research. Dr. Dam was a member of the graduate program committee and tenure promotion and reappointment committee of the Chemistry department. He is a founding executive member of Michigan Tech Health Research Institute (HRI). He has been involved with HRI since its inception and continues to contribute to the Institute. Dr. Dam is a participant in the recently submitted NIH T32 proposal. He participated in Tech Forward initiatives in Health and Education in the 21st Century. He has served on more than 50 graduate student advisory committees across the campus. Dr. Dam regularly reviews manuscripts for international journals. He served as an ad hoc reviewer for NSF. He was also approached by other universities to evaluate their proposals prior to submission to federal grant agencies.

- *Recent and Significant Publications/Exhibitions/Performances/Etc.*

1. Edwards, J. L., Kadav, P. D., Bandyopadhyay, P., **Dam T. K*.** Revealing the identity of human Galectin-3 as a glycosaminoglycan-binding protein. **Methods in Molecular Biology**, in press. (2022).
2. Kadav, P. D., Edwards, J. L., Bandyopadhyay, P, Brewer, C. F., **Dam T. K***. Molecular and mechanistic basis of lectin-carbohydrate interactions. **Comprehensive Glycoscience** (Second Edition), (Elsevier), Volume 3, 346-404 (2021).
3. Welch, C. J., Kadav, P. D., Edwards, J. L., Krycia J., Talaga, M. L., Bandyopadhyay, P. and **Dam T. K***. A Rapid and Facile Purification Method for Glycan-Binding Proteins and Glycoproteins. **Curr Protoc Protein Sci**. 101(1):e113 (2020) [**Cover Article**]
4. Welch, C. J., Talaga, M. L., Kadav, P. D., Edwards, J. L., Bandyopadhyay, P. and **Dam T. K***. A capture and release method based on noncovalent ligand cross-linking and facile filtration for purification of lectins and glycoproteins. **J Biol Chem.** 295, 223-236 (2020).
5. Talaga, M. L., Fan, N., Fueri, A. L., Brown, R. K., Bandyopadhyay, P. and **Dam T. K***. Multitasking Human Lectin Galectin-3 Interacts with Sulfated Glycosaminoglycans and Chondroitin Sulfate Proteoglycans. **Biochemistry**. 55, 4541-4551 (2016).

INFORMATION SHEET FOR BOARD OF TRUSTEES
SHANE T MUELLER
Michigan Technological University

Shane T. Mueller, who is currently an associate professor with tenure in the Department of Cognitive and Learning Sciences in the College of Sciences and Arts, is being considered for promotion to full professor of psychology and human factors in the Department of Cognitive and Learning Sciences in the College of Science and Arts.

Academic Degrees:

Ph.D.	2002	(Cognitive Psychology) University of Michigan, Ann Arbor, MI
B.A.	1996	(Psychology and Mathematics) Drew University, Madison NJ

Professional Record:

2021-present 2015 – present	Affiliate Associate Professor, College of Computing, Michigan Tech Associate Professor, Cognitive and Learning Sciences, Michigan Tech
2011-2015	Assistant Professor (tenure track), Cognitive and Learning Sciences, Michigan Tech
2006 – 2016	Senior Scientist, Klein Associates Division of ARA, Inc., Dayton OH
2003 – 2006	Post-doctoral Researcher, Dept. of Psychology, Indiana University, Bloomington, IN
2002-2003	Lecturer, Department of Psychology, University of Michigan, Ann Arbor MI.

Summary of Accomplishments:

● *Teaching*

Dr. Mueller teaches courses at the undergraduate level in Psychology Research Methods and Experimental Design, and at the graduate level in Advanced statistical methods, Memory and Learning, Computational Cognitive Modeling, and Human-AI Explanation. His undergraduate teaching involves two courses, which guide students from practice in narrowly-scoped research approaches, to a supervised independent research project carried out in the second semester culminating in a mini-conference. His graduate courses in advanced statistics is targeted toward psychology, human factors, and other behavioral science disciplines, and attracts graduate students from a number of programs outside the ACSHF program (biological science, KIP, data science, chemistry). The course is developed to provide these students---who have typically not been exposed to data management, programming, or advanced algorithms---to help them become proficient in the R statistical computing language and a variety of analytic techniques (from inferential statistics and data visualization to machine learning and classification). Although this class has the reputation for being the hardest course in our graduate program, Dr. Mueller has twice been recognized for achieving top 10% teacher evaluations in this class.

● *Research/Scholarly Activity*

Dr. Mueller has a broad range of research interests centering on mathematical and computational approaches to measuring and modeling human cognition and performance. Perhaps the greatest contribution he has made to the scientific community is the development of the Psychology Experiment Building Language (PEBL), a free/open-source programming language designed to support systematic computerized testing and assessment of psychological measures. The PEBL system has been downloaded more than 300,000 times since 2003, in 1200-1800 publications, and is in use in research laboratories and by mental health professionals worldwide. As part of the PEBL system, Dr. Mueller has developed more than 100 behavioral tasks that assess memory, attention, learning, motor control, decision making,

cognitive flexibility, executive function, and other relevant capabilities. He has also made a number of other methodological advances, including development of algorithms and measures, and models of human cognition. These include non-parametric measures of classification sensitivity, optimization-based measures of path similarity, clustering approaches to identify shared knowledge, and a number of evaluation approaches for testing AI (i.e., Turing tests) as well as explainable AI systems (measures of goodness, self-explanation, satisfaction, trust, understanding, and performance.)

His empirical research has focused on how we use our knowledge and memory to support complex behaviors, and understand complex systems and processes, especially in applied contexts. This has involved several distinct research threads, including understanding how experts use memory search in word games like crossword and SCRABBLE, how humans perform search in spatial environments, how we search visual displays to find targets and threats, how different stressors (heat, activity, distraction) might impair performance in cognitive and perceptual tasks, a variety of other topics in human cognition, perception, memory, and reasoning. Much of his recent research has focused on the psychology of explanation, especially in the context of the human-AI system, and so-called "explainable AI". This work was funded through a large DARPA program, in which he helped to develop measures and theories of explanation. His contributions to this program became the centerpiece of the program evaluation, and have had a large impact on how XAI systems are currently tested with human users. As part of this, he has explored a large number of approaches for developing explanations to see whether different data visualization and analytic approaches are likely to be effective, from naturalistic investigations of how physicians explain conditions to patients, to the development and testing of a number of prototype explanatory systems.

● *Service*

Dr. Mueller has served the department, college, and university in a number of roles. In the department, he has frequently served on the promotion and tenure committee, as chair of the graduate program committee and on the chair's advisory committee, and other ad hoc committees such as chair reappointment, hiring, and charter. At the university and college level, he has served on the Research Advisory Council for the past 4 years, as well as the previous Dean's evaluation committee, as a senate alternate, and a number of other service roles. He also serves his discipline, regularly serving on program committees for workshops and conferences. He is an advisor to the MTU Bangladeshi Student Organization, and a member of the BSA Troop 207 organizing committee.

● *Recent and Significant Publications/Exhibitions/Performances/Etc.*

Klein, G., Hoffman, R. Mueller, S., & Newsome, E. (2021). Modeling the Process by Which People Try to Explain Complex Things to Others. Journal of Cognitive Engineering and Decision Making. In press.

Alam, L.*, & Mueller, S. (2021). Examining the effect of explanation on satisfaction and trust in AI diagnostic systems. BMC medical informatics and decision making, 21(1), 1-15.

Mueller, S. T. (2020). Cognitive Anthropomorphism of AI: How Humans and Computers Classify Images. Ergonomics in Design: The Quarterly of Human Factors Applications, 28(3), 12—19.

Mueller, S. T. (2019). A Cognitive Examination of Skill and Expertise in Word Games and Puzzles. In P. Ward, J. M. Schraagen, J. Gore, & E. Roth (Eds), The Oxford Handbook of Expertise.

Mueller, S. T., Veinott, E. S., Hoffman, R. R., Klein, G., Alam, L.*, Mamun, T.*, & Clancey, W. J. (2021). Principles of Explanation in Human-AI Systems. AAAI-2021, Explainable Agency in AI Workshop.

Mueller, S. T., Agarwal, P.*, Linja, A.*, Dave, N.* & Alam, L.* (2020). The Unreasonable Ineptitude of Deep Image Classification Networks. Proceedings of the 2020 conference of the Human Factors and Ergonomic Society (HFES2020).

INFORMATION SHEET FOR BOARD OF TRUSTEES
Qinghui Chen
Michigan Technological University

Qinghui Chen, who is currently an associate professor with tenure in the Department of Kinesiology and Integrative Physiology (KIP) in the College of Science and Arts (CSA), is being considered for promotion to Full Professor in the Department of Kinesiology and Integrative Physiology in the College of Science and Arts.

Academic Degrees:

Ph.D.	1998	Dept. of Physiology, Kagawa Univ. Medical School, Kagawa, Japan
M.S.	1990	Medical School of Southeast Univ., Nanjing City, China
B.S.	1984	Nantong Univ. College of Medicine, China

Professional Record:

2016 – present	Associate Professor (Tenured), Department of KIP, MTU.
2010 – 2016	Assistant Professor/Tenure Track, Department of KIP, MTU.
2006 – 2010	Assistant Professor/Research Track, Department of Physiology, Univ. of Texas, Health Science Center at San Antonio, Texas (UTHSCSA).
1999 – 2006	Postdoctoral Fellow, Dept. of Physiology, UTHSCSA

Summary of Accomplishments:

- Teaching

Dr. Chen was recognized by the Provost for receiving teaching evaluation scores in the top 10% of all sections taught in the Fall of 2018. He successfully established and taught: 1) Cardiopulmonary Physiology; 2) Cardiac Electrophysiology and ECG Interpretation; 3) Exercise Pharmacology; 4) Advanced Exercise Integrative Physiology; 5) Neuroendocrine Physiology; 6) KIP Graduate Seminar course. (Average rating: 4.46, 2016-2021). Dr. Chen has directly mentored two PhD (one graduated in 2016 and another one graduated in 2017), one MS (graduated in 2018) and more than 15 undergraduate students in his lab. He has advised more than 20 graduate students as committee members. Currently, Dr. Chen is mentoring one PhD candidate (4th year), one MS candidate (1st year) and three undergraduate students in the lab. One PhD student was awarded finishing fellowship by the Graduate School and one PhD student was awarded by Songer Research Award for Human Health Research and Health Research Institute (HRI) graduate fellowship. One Ph.D. student was awarded a national pre-doctoral fellowship from the American Heart Association in 2017. Two PhD students were honored by Student Merit Research Award sponsored by either American Physiological Society (APS) or Michigan Physiological Society (MPS). Three undergraduate students were awarded by Undergraduate Research Internship Program (URIP) and Summer Undergraduate Research Fellowship (SURF).

- Research/Scholarly Activity

To date, Dr. Chen has been funded by extramural grants (NIHR15, AHA-SDG and AHA-BGIA) totaling $3,866,091.00, with $1,464,214.00 as PI. Currently, Dr. Chen has active NIH grants totaling $2,423,266.00 with $459,000.00 as PI. In addition, Dr. Chen has submitted NIHR01 proposal as a co-PI collaborated with Dr. Zhiying Shan (PI, KIP), which has received a fundable percentile score (14%). This score is within the funding pay line of 2021 NHLBI R01 (the payline for 2021 is 15%) and is expected to be funded in April 2022 (2021 NHLBI payline: https://www.nhlbi.nih.gov/current-operating-guidelines).

Dr. Chen's research accomplishments have been recognized by the research community and society. He has been invited to serve on editorial board of six peer-reviewed journals and serve as a peer reviewer for more then 20 journals. In addition, Dr. Chen has been selected to serve as Chairs for two Featured Topics sponsored by American Physiological Society (APS-NCAR and APS-CNS sessions) at 2017 and 2022 Experimental Biology annual meetings, separately. He has published more than 60 peer-reviewed scientific papers and more than 100 abstracts presented in scientific meeting/conference.

- Service

Dr. Chen is active on the MTU Senate (2013-2017, and 2021 Fall-present); has served on MTU Graduate Faculty Council (GFC) committee (2014-2017), CSA College PTR committees (2017-2019); and served on many department committees including as chair of faculty search committees, graduate committee; and PTR committees. He is active in the Health Research Institute (HRI) by serving on the Evaluation Committee, Michigan Tech Forward in Health Research and Executive Committee. He is also serving as the review committees and the judge at BRC/LSTI/HRI Research Forum, Graduate Research Colloquium, Summer Undergraduate Research Fellowship (SRUF) program and Research Excellence Fund at the MTU.

- Recent and Significant Publications/Exhibitions/Performances/Etc.

1. Fan Y, Jiang E, Gao H, Bigalke J, Chen B, Yu C, Chen Q*, Shan Z*. Activation of Orexin System Stimulates CaMKII Expression. Front Physiol. 2021;12:698185. doi: 10.3389/fphys.2021.698185. (*co-corresponding authors). *My contribution to this work as co-corresponding author: I helped to design and perform the in vivo SNA recordings and microinjection of experiments, data analysis and interpretation, as well as addressing part of reviewer's comments.*

2 . Bigalke JA, Gao H, Chen QH, Shan Z. Activation of Orexin 1 Receptors in the Paraventricular Nucleus Contributes to the Development of Deoxycorticosterone Acetate-Salt Hypertension Through Regulation of Vasopressin. Front Physiol. 2021;12:641331. doi: 10.3389/fphys.2021.641331.

3. Gao H, Bigalke J, Jiang E, Fan Y, Chen B, Chen QH, Shan Z. TNFα Triggers an Augmented Inflammatory Response in Brain Neurons from Dahl Salt-Sensitive Rats Compared with Normal Sprague Dawley Rats. Cell Mol Neurobiol. 2021 Feb 24;. doi: 10.1007/s10571-021-01056-9.

4. Chapp AD, Behnke JE, Driscoll KM, Hahka T, LaLonde Z, Shan Z, Chen QH*. Elevated L-lactate Drives Major Cellular Pathologies Associated with Neurodegenerative Diseases. Neurosci. Bull. 2021, 37(3):380–384.

5. Hua X, Han J, Zhao C, Tang H, He Z, Chen QH, Tang S, Tang J, Zhou W. A novel method for ECG signal classification via one-dimensional convolutional neural network. Multimedia Systems. 2020 November. doi: https://doi.org/10.1007/s00530-020-00713-1.

6. Guo X, Zhang J, Zhu J, Chen QH, Wang R, Gui L. Enhanced store-operated calcium entry in platelets is associated with acute coronary syndrome. Acta Biochim Biophys Sin. 2020 Feb 3;52(2):207-210.

7. Bruning J, Chapp A, Kaurala GA, Wang R, Techtmann S, Chen QH*. Gut Microbiota and Short Chain Fatty Acids: Influence on the Autonomic Nervous System. Neurosci Bull. 2020 Jan;36(1):91-95.

8. Sharma D, Jia W, Long F, Pati S, Chen QH, Qyang Y, Lee B, Choi CK, Zhao F. Polydopamine and collagen coated micro-grated polydimethylsiloxane for human mesenchymal stem cell culture. Bioact Mater. 2019 Dec;4:142-150.

9. Cheng ZJ, Wang R and Chen QH*. Autonomic Regulation of Cardiovascular System: Diseases, Treatments, and Novel Approaches. Editorial for Special Issue on Regulation of Autonomic Nervous System. Neurosci Bull. Editorial 2019 Feb;35(1):1-3.

10. Wu JX, Tong L, Hu L, Xia CM, Li M, Chen QH, Chen FX, Du DS. Upregulation of Nav1. 6 expression in the rostral ventrolateral medulla of stress-induced hypertensive rats. Hypertension Research. 2018 Dec;41(12):1013-1022

11. Chapp AD, Behnke JE, Driscoll KM, Fan Y, Hoban E, Shan Z, Zhang L, Chen QH*. Acetate Mediates Alcohol Excitotoxicity in Dopaminergic-Like PC12 Cells. ACS Chem Neurosci. 2019 Jan 16;10(1):235-245.

INFORMATION SHEET FOR BOARD OF TRUSTEES
Ramy El-Ganainy
Michigan Technological University

Ramy El-Ganainy, currently a tenured associate professor of physics in the College of Sciences and Arts, is being considered for promotion to full professor of physics in the College of Sciences and Arts.

Academic Degrees:

Ph.D.	2009	University of Central Florida, FL
M.S.	2007	University of Central Florida, FL
M.S.	2001	Cairo University, Cairo, Egypt
B.S.	1999	Cairo University, Cairo, Egypt

Professional Record:

2017 – present	Tenured Associate Professor, Department of Physics, Michigan Technological University
2013 – 2017	Assistant Professor, Department of Physics, Michigan Technological University
2012– 2013	Guest Scientist, Max Planck Institute for the Physics of Complex Systems, Germany
2009 – 2012	Postdoctoral Fellow, Department of Physics, University of Toronto, Canada

Summary of Accomplishments:

- *Teaching*

Over the past years, Dr. El-Ganainy has taught a diverse set of physics courses at undergraduate and graduate levels including Electrodynamics, Quantum mechanics, University physics I. He has received positive student assessments in all these courses, as evidenced by the evaluation sheets attached with this application package.

Dr. El-Ganainy has a unique teaching style that aims to actively engage the students and retain their interest throughout the course by involving the historical development of the subject and its real-life applications. In addition, Dr. El-Ganainy has developed new material within the same course every academic year. For example, in 2020, He taught graduate electrodynamics (PH5210), following a standard curriculum used in almost all universities. A year later, in 2021, He has restructured the course to introduce the main topics through the lens of computational physics. In doing so, he integrated concepts from numerical analysis into the homework, thus enhancing students' computational skills, which is very valuable for research and the job market. Furthermore, Dr. El-Ganainy introduced an online course in 2020 on the very new topic of quantum photonics with applications to encryption, communications, and computations (PH5090-01). Combining these two state-of-the-art topics (photonics and quantum technology) allows students at MTU to remain up to date with the research frontiers in prominent academic institutes and industries worldwide.

At the more formal level, Dr. El-Ganainy has led the effort to introduce a photonics certificate within the physics department and is currently developing an M.S. program in photonics and quantum technology. Taken together, these teaching/program developing activities will equip MTU students with state-of-the-art knowledge and skills to further enhance their careers both at the academic and industrial fronts.

- *Research/Scholarly Activity*

Dr. El-Ganainy's research activities span a wide range of topics in optics and photonics, ranging from non-Hermitian photonics and nonlinear optics to quantum light-matter interactions and topological

photonics. His research work has resulted in numerous publications, several of which are in highly reputable journals such as Science, Nature, Nature Physics, Nature Photonics, Nature Communications, and Physical Review Letters. As per quality metrics, according to google scholar, Dr. El-Ganainy's publications have more than 13500 citations with an h-factor of 34 and an i-factor of 61. In recognition of his work, Dr. El-Ganainy was promoted to a senior member of the Optical Society of America (OSA) in 2019. More recently, he has been awarded the prestigious Humboldt Fellowship for Experienced Researchers by the Humboldt Foundation.

Notably, Dr. El-Ganainy maintains an extensive network of collaborators within the United States as well as overseas. This allows him to collaborate with experimental groups to realize and implement his research ideas and proposals. As a result of these collaborative efforts, he was a part of a team consisting of seven universities that have recently received a competitive MURI grant (from the U.S. Department of Defense) totaling $7M. At the educational level, this collaborative network provides Ph.D. students working in Dr. El-Ganainy's group with a unique opportunity to conduct research work in other universities and acquire new research skills. Dr. El-Ganainy's research in optics and photonics strengthens this area of research within the physics department at MTU and increases its national and international visibility. On the one hand, this will help attract bright graduate students. On the other hand, it will provide strong support for the department's strategic plan of expanding education in photonics.

- *Service*

In terms of service, Dr. El-Ganainy has been active at all levels; e.g., he chaired the department colloquium and qualifier committees. Currently, he is serving as a senate member. In terms of professional service, Dr. El-Ganainy served as a reviewer to several reputable academic journals such as Science and Nature. He is currently a topical editor of the JOSA B journal and a committee member of the CLEO conference (the largest conference for optics and photonics in the world). In addition, Dr. El-Ganainy has served as a panel member to review proposals within the USA, Germany, Canada, and other countries, particularly in Europe.

- *Recent and Significant Publications/Exhibitions/Performances/Etc.*

1. Q Zhong, J Kou, SK Ozdemir, R El-Ganainy, "Hierarchical construction of higher-order exceptional points," **Physical review letters** 125, 203602 (2020).
2. M. Sakhdari, M. Hajizadegan, Q. Zhong, D. N. Christodoulides, R. El-Ganainy, and P-Y Chen, "Experimental Observation of P.T. Symmetry Breaking near Divergent Exceptional Points," **Physical review letters** 123, 193901 (2019).
3. Q. Zhong, J. Ren, M. Khajavikhan, D. N. Christodoulides, Ş. K. Ozdemir, and R. El-Ganainy, "Sensing with exceptional surfaces in order to combine sensitivity with robustness," **Physical review letters** 122, 153902 (2019).
4. M. P. Hokmabadi, N. S. Nye, R. El-Ganainy, D. N. Christodoulides and M. Khajavikhan, "Supersymmetric laser arrays," **Science** 363 (6427), 623-626 (2019).
5. Z. Zhang, M. H. Teimourpour, J. Arkinstall, M. Pan, P. Miao, H. Schomerus, R. El- Ganainy and L. Feng, "Experimental Realization of Multiple Topological Edge States in a 1D Photonic Lattice," **Laser & Photonics Reviews**, 1800202 (2019).
6. Q Zhong, M Khajavikhan, D Christodoulides, and R El-Ganainy, "Winding around Non-Hermitian Singularities," **Nature Communications**, 9, 4808 (2018).
7. H Zhao, P Miao, M H Teimourpour, S, Malzard, R El-Ganainy, H Schomerus, Liang Feng "Topological Hybrid Silicon Microlasers," **Nature Communications** 9, 981 (2018).
8. Pai-Yen Chen, M Sakhdari, M Hajizadegan, Q Cui, M Cheng, R El-Ganainy, A Alu, "Generalized Parity-Time Symmetry for Sensor Telemetry," **Nature Electronics** 1, 297 (2018).

INFORMATION SHEET FOR BOARD OF TRUSTEES
JARED L. ANDERSON
Michigan Technological University

Jared L. Anderson, who is currently an associate professor of music with tenure in the Department of Visual and Performing Arts in the College of Sciences and Arts, is being considered for promotion to professor of music with tenure in the Department of Visual and Performing Arts in the College of Sciences and Arts.

Academic Degrees:

D.M.A.	2004	The University of Minnesota, Minneapolis, MN
M.M.	2000	Brigham Young University, Provo, UT
B.M.	1996	Brigham Young University, Provo, UT

Professional Record:

2016 – present	Department Chair, Department of Visual and Performing Arts, Michigan Technological University
2014 – 2016	Interim Department Chair, Department of Visual and Performing Arts, Michigan Technological University
2014 – present	Associate Professor (with tenure), Department of Visual and Performing Arts, Michigan Technological University
2010 – 2014	Assistant Professor (without tenure), Department of Visual and Performing Arts, Michigan Technological University
2004 – 2010	Assistant Professor of Music (without tenure), Northland College
2001 – 2004	Graduate Teaching Assistant, School of Music, University of Minnesota, Minneapolis, MN
2000 – 2002	Office Manager, Dale Warland Singers, Minneapolis, MN
1999 – 2003	Professional Singer/Tenor Section Leader, Dale Warland Singers, Minneapolis, MN
1995 – 1999	Graduate Teaching Assistant, School of Music, Brigham Young University

Summary of Accomplishments:

- *Teaching*

Dr. Anderson was a finalist for the 2013 and 2014 Distinguished Teaching Awards at Michigan Tech. Since his appointment as department chair in 2014, he has continued to teach at least two classes per semester (MUS 2580/FA 3510 Concert Choir and MUS 3580/FA 3580 Chamber Choir). There have been other semesters since his appointment as chair where he has taught additional courses, including FA 3400 Keweenaw Symphony Orchestra and FA 2501 Basic Musicianship. Student evaluation scores of his teaching have regularly been in the top 10% of courses at Michigan Tech. Service as a department chair has made him ineligible for teaching award recognition at the university. During his career at Michigan Tech, he taught a wide variety of courses in the department, including Music Theory 1 and 2, Basic Musicianship, Masterworks in Music, and Group Voice.

- *Research/Creative Activity*

Dr. Anderson has been an active conductor since he joined the faculty at Michigan Tech in 2010. He conducts the Michigan Tech Concert Choir and conScience: Michigan Tech Chamber Singers each

semester. Leadership of these two choral ensembles at Michigan Tech has been the principal focus of his creative activities. Notable concerts include juried performances by conScience: Michigan Tech Chamber Singers at the American Choral Directors Association-Michigan Fall Conferences in 2015 and 2019 (as well as virtual contributions to the 2021 conference). He has led two successful international tours of the Michigan Tech Concert Choir to South Africa (2017) and the Dalmatian Coast/Balkans (2013). He also coaches singers and conducts musical theatre productions in the department, including the 2018 performance of Stephen Sondheim's *Sunday in the Park with George*.

- *Service*

Dr. Anderson is active in a number of professional organizations, with significant service given to American Choral Directors Association-Michigan. In 2013 he was elected as president of the state association (over 400 members), and served six years in leadership related to that post (president-elect, president, past-president) from 2013-2019. While serving as ACDA-MI President he oversaw the organization and execution of the 2015 and 2016 Fall Conferences. ACDA-MI was recognized in 2016 with an Outstanding Growth in Active Membership Award by the national ACDA office.

Currently Dr. Anderson serves as chair of the Department of Visual and Performing Arts (VPA), a position he has held since December 2014, seven months after receiving tenure at the university and promotion to the rank of associate professor. His original appointment as chair came at the request of the Dean of the College of Sciences and Arts under unusual circumstances, requiring significant work to help the department navigate difficult challenges and new opportunities. In July of 2015 the VPA department merged with the Rozsa Center for the Performing Arts. As chair he oversees the administrative staff and budgets of that facility along with the academic administration of all aspects of the VPA department.

He has served on a number of faculty and staff search committees, inside and outside the Department of Visual and Performing Arts, including chair of the search for the Dean of the College of Sciences and Arts. He has served on the General Education Council and currently serves on committees relating to proposals for the new Essential Education program.

- *Recent and Significant Publications/Exhibitions/Performances/Etc.*

Anderson, Jared L, "*Music in Sacred Spaces*", Conductor, conScience: Michigan Tech Chamber Singers, Sponsor: Visual and Performing Arts Department. (March 1, 2021 - May 28, 2021).

Anderson, Jared L, "*Music in the Mine*", Conductor, conScience: Michigan Tech Chamber Singers, Sponsor: Visual and Performing Arts Department. (October 9, 2020).

Anderson, Jared L, "*Mozart Requiem*", Conductor, Keweenaw Symphony Orchestra, Michigan Tech Concert Choir, and conScience: Michigan Tech Chamber Singers, Sponsor: Visual and Performing Arts Department. (December 14, 2019). Performance of Antonio Vivaldi's *Gloria* and W.A. Mozart's, *Requiem.*

Anderson, Jared L, "*conScience at ACDA-MI State Conference*", Conductor, conScience: Michigan Tech Chamber Singers, Sponsor: American Choral Directors Association-Michigan. (October 26, 2019).

Anderson, Jared L, "*Sunday in the Park with George*", Music Director, Michigan Tech Theatre Company, Sponsor: Michigan Tech Visual and Performing Arts Department. (April 11, 2019 - April 13, 2019).

Anderson, Jared L, "*Voices of Light*", Tenor Soloist, Keweenaw Symphony Orchestra and conScience: Michigan Tech Chamber Singers, Sponsor: Michigan Tech Visual and Performing Arts Department. (November 2, 2017).

Anderson, J. L. Published The Dale Warland Singers. In L. Brett Scott (Ed.), *Research Memorandum Series* (205), 86 pages. Washington, D.C.: The American Choral Foundation: Chorus America (2014).

INFORMATION SHEET FOR BOARD OF TRUSTEES
Patricia (Trish) Helsel
Michigan Technological University

Prof. Helsel joined MTU's Visual and Performing Arts Department (VPA) in 2007 as Assistant Professor of Theatre. She was promoted with tenure to Associate Professor in 2013. She is being considered for promotion to Full Professor.

Academic Degrees:

M.F.A.	1987	Minnesota State University - Mankato
B.A.	1984	Elmira College

Professional Record:

2013 – present	Associate Professor of Theatre, Michigan Technological University, Houghton, MI
2009 - present	Owner/Voice Talent, OnAirVoices, Houghton, MI
2007-2013	Assistant Professor of Theatre, Michigan Technological University, Houghton, MI
2003 - 2006	Instructor, Northwestern State University, Natchitoches, LA
2003 – 2006	Director/Teacher, Louisiana School for Math, Science, and the Arts, Natchitoches, LA
1997-2003	Instructor, The University of Louisiana at Monroe, Monroe, LA
1995-1997	Director/Teacher, Unicorn Theatre, Logan, UT
1995-1997	Instructor, Utah State University, Logan, UT
1988-1993	Guest Director/Teacher, Robidoux Resident Theatre, St. Joseph, MO
1990-1992	Artistic Director, Clinton Area Showboat Theatre, Clinton, IA

Summary of Accomplishments:

Teaching

Prof. Helsel teaches a broad range of performance courses including all levels of Acting, Vocal Techniques for Media, Acting for Television and Film, and Musical Theatre. Her student evaluations demonstrate effectiveness with mean scores in the top tier for the College of Sciences and Arts. Peer evaluations suggest she is passionate about teaching and that students are engaged. Helsel has developed courses geared toward voice acting that help to set Michigan Tech's program apart from others. She devotes considerable time outside of class to coach students, helping them to realize their potential. She continues to adapt classes to incorporate better ways to reach students (such as offering choices in types of assignments) and she regularly develops new classes, the most recent being Puppetry, inspired by her experience with puppets during her sabbatical.

Research/Scholarly Activity

Prof. Helsel's 2017 sabbatical with the Center for Puppetry Arts in Atlanta, GA, inspired her to develop a local puppet program, The Puppet Project, for which she received a $14,000 Research Excellence Grant. The project allowed for research and construction of puppets and a full 2-story puppet stage. So far, Helsel has provided community outreach for productions at the Rozsa Center and offered a series of summer workshops for all ages. Currently, she is partnering with The Storytelling Center in Calumet where the stage has been set for events and shows.

This Information Sheet Should Not Exceed Two Pages in Length

Trish Helsel has a good ear for accents and contributes to the International Dialects of English Archive, an online database of dialects from around the world. She has contributed samples from Philadelphia, Malaysia, and Michigan's Upper Peninsula ("Yooper").

Service

Prof. Helsel heads the Theatre and Electronic Media Performance program which she crafted to include unique training for actors interested in broadening their career aspirations to include voice acting and other digital forms of media. Her university service includes 3 years on the General Education Council, 3 years on the College of Sciences and Arts Tenure and Promotion Committee, and many other committees within the Visual and Performing Arts Department such as Curriculum, Major Programs, and Promotion and Tenure. She served as Workshop Coordinator for the Kennedy Center American College Theatre Festival, Region III where she increased professional workshops by more than 100%.

Prof. Helsel helped students to establish a chapter of Alpha Psi Omega honor society, which she advises. In Fall, 2019, the organization received a $3000 grant from the national organization to offer a residency for stage combat with the Ring of Steel company, Ann Arbor, MI. Students and community learned staged combat and aerial silk techniques in the event, which took place over three days. The event was also funded, in part, by the Visiting Scholars program.

Recent and Significant Publications/Exhibitions/Performances/Etc.

Trish Helsel is a professional voice actor who owns and operates her own recording studio, OnAirVoices where she produces a variety of audio projects ranging from radio/tv commercials to web videos, to mobile apps, eLearning, and audiobooks. She recently signed a long-term contract with Sandia National Laboratories to narrate web videos and training films for their Creative Department.

Helsel is also a professional director, directing two productions each academic year. As you read through her portfolio, you discover Patricia Helsel has depth in other fields including scenery, sound, properties, puppets, and music. She is also diverse in her selection of dramatic styles for production, including Classical, Contemporary, Avant Guard, and a variety of musicals. She was twice awarded a Certificate of Merit from the Kennedy Center American College Theatre Festival for directing. MTU's production of Ionesco's *The Bald Soprano and The Lesson*, directed by Helsel, was chosen to be performed at the regional festival in 2010, a great honor and excellent learning experience for MTU's students.

To date, Trish Helsel has performed in and directed over 100 productions. She is looking forward to continued development of the Theatre and Electronic Media Performance program, helping students to build entrepreneurial skills to land jobs in the acting industry. She continues to research and expand the activities of The Puppet Project, works consistently with her OnAirVoices clients, while collaborating with Visual and Performing Arts colleagues on creative projects such as theatre, radio drama, and puppetry.

INFORMATION SHEET FOR BOARD OF TRUSTEES

JOEL BENJAMIN NEVES

Michigan Technological University

Joel Neves, who is currently an Associate Professor of Music in the Visual and Performing Arts Department in the College of Sciences and Arts, is being considered for promotion to Professor of Music.

Academic Degrees:

D.M.A.	2006	Arizona State University (Tempe, AZ) [Doctor of Musical Arts – Orchestral Conducting]
M.M.	2001	Brigham Young University (Provo, UT) [Master of Music -- Orchestral Conducting
B.A.	1999	Brigham Young University (Provo, UT) [Bachelors of Arts -- Trumpet Performance]

Professional Record:

2009 – present	Associate Professor of Music, Visual and Performing Arts Department, College of Sciences and Arts, Michigan Technological University (Houghton, Michigan)
2011-2013, 2015-2019	Artistic Director, Pine Mountain Music Festival (Houghton, Michigan)
2006-2009	Assistant Conductor, Orchestra of Southern Utah (Cedar City, Utah)
2006 – 2009	Orchestra Director, Cedar High School & Middle School, Iron County School District (Cedar City, Utah)
2006 – 2008	Jazz Ensemble and Music Theatre Director, Southern Utah University (Cedar City, Utah)

Summary of Accomplishments:

Teaching

Neves was named as a Finalist for the Michigan Tech Distinguished Teaching Award in 2016, in which he was inducted into the Academy of Teaching Excellence. His student evaluation scores have placed in the top 10% of university faculty for many semesters, and student comments consistently praise his teaching style and ability to make course content interesting and relevant to students' lives.

He has contributed significantly to the curriculum of the Visual and Performing Arts department. He created a new music degree—Minor in Music Performance—which provides ensemble, conducting, and private lesson experiences for advanced student musicians. He also developed two new courses: Conducting and Interpretation (MUS 4100) and Beatles and Beach Boys (MUS 3020). Conducting and Interpretation is a capstone music performance and music philosophy seminar for sound and music performance students. Beatles and Beach Boys is one of the highest enrolled summer courses in the department.

Neves also envisioned and created the first Private Music Lessons program at Michigan Tech (MUS 1570), in which thirteen professional instructors teach 80-90 students per semester in private one-on-one music instruction. This program has tangibly improved both individual musicianship and group artistry in the VPA department's music ensembles.

Research/Scholarly Activity

Joel has contributed important scholarly research to the college orchestra conducting field on the subject of repertoire appropriate for college orchestras, with a special emphasis on women composers, traditional repertoire, and contemporary music. He published an article in the CODA Journal—the most important peer-reviewed journal in the conducting field—titled, "Selecting Appropriate Literature for College Orchestra: A Study of Repertoire and Programming Choices of CODA Conductors." He has also presented at the CODA national conference twice (2012 and 2019) concerning his research on repertoire and programming choices for college orchestras. The most innovative aspect of his research has been the creation of numerous comprehensive databases of music appropriate for the college orchestra. These databases have proven to be useful new resources in the conducting field.

Since music performance is the main focus on his faculty job description, Joel's main "scholarly" accomplishment has been the work he has done with the Keweenaw Symphony Orchestra (KSO) here at Tech. The orchestra has grown artistically under his tutelage. He has expanded its repertoire beyond the merely symphonic to also include classical pops, video game and film music, music theatre, opera, and ballet. Case in point: the KSO will collaborate with the Minnesota Ballet this weekend on Tchaikovsky's *Nutcracker* to sold-out audiences in the Rozsa. Its 2015 Nutcracker performance was deemed professional enough quality to be broadcast in the Upper Midwest on Minnesota Public Radio on Christmas Day. The KSO has received numerous national awards during Joel's tenure, including 2nd Place in the American Prize in Orchestral Performance and 3rd Place in the American Prize in Orchestral Conducting. These are significant achievements in the orchestra conducting field.

Service

Neves has served on many committees at Michigan Tech, including as Director of the Music Division in the Visual and Performing Arts department, Chair of the Faculty Development Committee, Chair of two search committees, Senator in the Faculty Senate, and Chair of a community outreach committee for VPA. It has been his pleasure to serve the students and faculty of the VPA department and the university in important academic, scholarly, community, and professional development functions.

In terms of professional service, Joel was National President of the College Orchestra Directors Association for the 2018-2019 term. (CODA is the only professional service organization for conductors of university orchestra programs in the United States and Canada.) As president, he was able to help grow membership in the organization, launch a national initiative on repertoire for college orchestras, and plan and organize the National Conference in Boston in February 2019. He also served as assistant editor of the CODA Journal for seven years, and in various other service positions for nine years.

Recent and Significant Publications/Exhibitions/Performances/Etc.

*December 2021 – Conductor, Tchaikovsky's *Nutcracker* with the Minnesota Ballet and KSO (Rozsa)
*October 2021 – Won 2nd Place in the American Prize in Orchestral Performance for the KSO
*October 2021 – Conductor, Beethoven's 250th Anniversary convert with the KSO (Rozsa)
*June 2021 – Conductor, Pine Mountain Music Festival's 30th Anniversary Season
*January 2020 – Guest Conductor, Utah All-State High School Orchestra (Abravanel Hall, SLC)
*2018-2019 – National President, College Orchestra Conductors Association
*January 2016 – Finalist, Michigan Tech Distinguished Teaching Award
*October 2015 & 2017 – Guest Conductor, Orquesta Sinfonica de Entre Rios (Parana, Argentina)
*May 2015 – Guest Conductor, Hubei Symphony Orchestra (Wuhan, China)

VIII-E. EMERITUS RANK

Recommendation for the granting of faculty emerita/emeritus status originates within the retiree's academic department and proceeds through the respective college. Once approved, the recommendation is presented to the Provost, and if successful, to the President of the University for presentation to the Board of Trustees.

RECOMMENDATION: It is recommended that the Board of Trustees approves the following emeritus appointment:

Dr. Jiann-Yang (Jim) Hwang, Professor Emeritus
Department of Materials Science and Engineering

Dr. Patricia Sotirin, Professor Emerita
Department of Humanities

Dr. Stanley Vitton, Professor Emeritus
Department of Civil, Environmental, and Geospatial Engineering

Michigan Technological University

Materials Science and Engineering

TO: Michigan Technological University Board of Trustees

FROM: Janet Callahan, Dean of the College of Engineering

DATE: February 9, 2022

SUBJECT: Recommendation for Emeritus Status

The faculty of the Materials Science and Engineering Department voted on February 1, 2022 to request that the Michigan Technological University Board of Trustees name Jiann-Yang (Jim) Hwang as Professor Emeritus upon his retirement on January 6, 2022.

Jim has served Michigan Tech with distinction since 1982. He has published around 300 refereed publications, has been issued 26 patents, and in addition to many other honors and awards, he was recently named a Fellow of The Minerals, Metals, and Materials Society, which is the highest honor in MSE and is limited to 100 living members.

Approved

W W Milligan 2/9/2022

Department Chair/School Dean _____ Date

College Dean _____ Date

Provost and Senior Vice President for Academic Affairs _____ Date

President _____ Date

609 Minerals and Materials Engineering Building | 1400 Townsend Drive, Houghton, MI 49931-1295
906-487-2630 | f. 906-487-2934 | **mtu.edu/materials**

Michigan Tech

Office Memo

Department of Humanities

Phone: (906) 487-2008
Fax: (906) 487-3559

TO: Michigan Technological University Board of Truestees

FROM: Scott Marratto, Chair - Department of Humanities

DATE: March 30, 2022

SUBJECT: Recommendation for Emerita Status

The faculty of the Department of Humanities/College of Sciences & Arts voted on December 21, 2021 to request that the Michigan Technological University Board of Trustees name Dr. Patricia Sotirin as Professor Emerita upon her retirement. (Please see the attached document for an overview of Dr. Sotirin's many scholarly accomplishments and contributions to Michigan Tech.)

Scott Marratto, Chair, Department of Humanities	Date
David Hemmer, Dean, College of Sciences and Arts	Date
Jacqueline E. Huntoon, Provost & Sr. VP for Academic Affairs	Date
Rick Koubek, President	Date

MEMO ADDENDUM: Dr. Patty Sotirin, Emerita Recommendation

Patty Sotirin has been involved in six book publications (2 as editor; 4 as author):

- Patty Sotirin, Victoria L. Bergvall, & Diane L. Shoos, *Feminist Vigilance*. Palgrave Macmillan, 2020.
- Patty Sotirin, Steven Walton, and Sue Collins, Eds., *Homefront in the American Heartland: Local Experiences and Legacies of WWI*. Cambridge Scholars Press, 2020.
- Laura L. Ellingson and Patty Sotirin, *Making Data in Qualitative Research: Issues, Ethics and Practices*. Routledge, 2019.
- Patty Sotirin and Laura L. Ellingson, *Where the Aunts Are: Family, Feminism, and Kinship in Popular Culture*. Baylor University Press, 2013.
- Elizabeth Flynn, Patty Sotirin, and Ann Brady, Eds., *Feminist Rhetorics of Resilience*. Utah State University Press, 2012.
- Laura L. Ellingson and Patricia J. Sotirin, *Aunting: Cultural Practices that Sustain Family and Community Life.* Baylor University Press. 2010. (Winner of the Bonnie Ritter Outstanding Book Award, Feminist Division, NCA, 2012.)

She has published numerous peer-reviewed articles in such journals as *Qualitative Inquiry*, *Organizational Management Journal*, *Review of Higher Education*, *Journal of Research Practice*, *Women and Language*, *Cultural Studies*, *Organization: The Critical Journal of Organization*, *Theory, and Society*, and *The American Journal of Semiotics*.

Dr. Sotirin has also published chapters in twenty books.

Her contributions to the profession and to Michigan Tech go well beyond this impressive record of scholarly productivity. She edited the journal *Women and Language* from 2010-15 and has organized a number of conferences. She was recognized in 2020 by the boards of *Women & Language* and the Organization for the Study of Communication, Language, and Gender, through their establishment of the "Patty Sotirin *Women & Language* Best Article of Year Award."

Dr. Sotirin was Co-PI on two NSF ADVANCE (Organizational Change for Gender Equity in STEM Academic Professions) grants:

- 2019, July (awarded). $170,000 National Science Foundation ADVANCE Partnership Grant. "ADVANCE Partnership: Joining Forces--A Midwestern Partnership of Research Intensive Institutions for Women STEM Faculty Success." PI: Cinzia

Cervato, Iowa State University; MTU PI: Adrienne Minnerick; Co-PIs S. Goltz, P. Sotirin.

- 2018, Fall (awarded). $1 million National Science Foundation ADVANCE Adaptation Grant, “Continuous Improvement Process to Transform Institutional Practices and Culture,” 8/1/2018-7/31/2023. PI: Adrienne Minnerick; Co-PIs: P. Sotirin, S. Goltz, A. Storer, A. Mayer.

Her contribution to Michigan Tech through her commitment to establishing and supporting institution practices to support diversity, equity, and inclusion, has been of immense significance. She will continue in the role of Research Professor after her retirement in order to be able to continue her important work on ADVANCE.

Michigan Tech

OFFICE MEMO

TO: Michigan Technological University Board of Trustees

FROM: Audra Morse, Chair, Department of Civil, Environmental, and Geospatial Engineering

DATE: March 28, 2022

SUBJECT: Recommendation for Emeritus Status

The faculty of the Department of Civil, Environmental, and Geospatial Engineering voted on January 20, 2022 to request that the Michigan Technological University Board of Trustees name Stanley Vitton as Professor Emeritus upon his retirement on June 30, 2022.

Stanley Vitton joined the Michigan Tech faculty in 1994. His research is in the area of geotechnical materials and during his twenty-eight years at Michigan Tech he had 31 peer reviewed publications, 20 peer reviewed conference proceedings, 27 reports, 4 book chapters, 61 professional presentations, 2 U.S. and international patents, and a total research funding of $6.3 million with $2.3 million directly attributed to Dr. Vitton.

Dr. Vitton was a finalist for the 1998 Saachi & Saachi Annual Innovation Award for the invention "Seismic Detection of Tornados and he was the SME Henry Krumb Lecturer in 2017.

Approved

_____
Department Chair/School Dean

_____
College Dean

_____
Provost and Senior Vice President for Academic Affairs

_____
President

VIII-F. PROPOSAL FOR A BACHELOR OF SCIENCE DEGREE IN BUSINESS ANALYTICS

The faculty in the Department of Mathematical Sciences, under the umbrella of the College of Sciences and Arts, in collaboration with the College of Business seek to establish a Bachelor of Science (BS) degree in Business Analytics. The joint program will be housed in the Department of Mathematical Sciences.

The BS in Business Analytics will provide students with business-domain knowledge and mathematical and statistical knowledge to prepare them for analytical careers within organizations. Students will learn to use mathematics and statistics to answer business questions and facilitate data-driven decision making within organizations.

The proposal has been approved by the University Senate and University administration. The University is seeking Board of Trustees approval to advance the proposal to the State Academic Affairs Officers.

RECOMMENDATION: It is recommended that the Board of Trustees approves the Bachelor of Science degree in Business Analytics.

VIII-G. PROPOSAL FOR A MASTER OF SCIENCE DEGREE IN SUSTAINABLE COMMUNITIES

The faculty in the Department of Social Sciences, under the umbrella of the College of Sciences and Arts, seeks to establish a Master of Science (MS) degree in Sustainable Communities. During their time in the program, students will be taught to address sustainability problems through holistic thinking and development of applied skills, which will prepare them to engage in sustainability-related professions in the public, private, and non-profit sectors.

The proposal has been approved by the University Senate and University administration. The University is seeking Board of Trustees approval to advance the proposal to the State Academic Affairs Officers.

RECOMMENDATION: It is recommended that the Board of Trustees approves the Master of Science degree in Sustainable Communities.

VIII-H. PROPOSAL FOR A BACHELOR OF SCIENCE DEGREE IN POLICY AND COMMUNITY DEVELOPMENT

The faculty in the Department of Social Sciences, under the umbrella of the College of Sciences and Arts, seeks to establish a Bachelor of Science (BS) degree in Policy and Community Development. The degree will prepare students to engage in professions in the public, private, and non-profit sectors, at the same time addressing the University's vision "to improve the quality of life and to promote mutual respect and equity for all people within the state, the nation, and the global community."

The BS in Policy and Community Development will provide students with an experiential learning environment, providing them the opportunity to gain marketable skills in data analysis, geographic information science (GIS), policy analysis, leadership, evidence-based decision-making, and teamwork. They will also have the opportunity to concentrate in the area of law, environment, or health to enhance their career trajectory.

The proposal has been approved by the University Senate and University administration. The University is seeking Board of Trustees approval to advance the proposal to the State Academic Affairs Officers.

RECOMMENDATION: It is recommended that the Board of Trustees approves the Bachelor of Science degree in Policy and Community Development.

VIII-I. PROPOSAL TO ELIMINATE SHELVED PROGRAMS

Deletion of academic programs rests with the Board of Trustees. Following Senate procedure 414.1.1, the following academic programs are recommended by the Senate and administration for deletion. All programs have been shelved for at least five years and there is no intent to revive them. No students are enrolled in these programs, and there is no expected negative financial impact to the University.

- Undergraduate certificates:
  - International Sustainable Development Engineering (CISE) (6-16)
  - Chinese and Area Studies (CCH) (12-16)
  - Media (CMD) (13-16)
  - Modern Language (CFR, CGE, CSP) (14-16)
  - Writing (CWR) (15-16)
  - Global Technological Leadership (CGTL) (18-16)
  - Hybrid Electric Drive Vehicle Engineering (CHEV) (34-16)
    - the graduate-level certificate in Hybrid Electric Drive Vehicles remains active
- Graduate degree programs:
  - PhD in Engineering Physics (33-16)

RECOMMENDATION: It is recommended that the Board of Trustees approves deletion of these academic programs.

VIII-J. REVISION TO BOARD POLICY 4.10. PRIVACY OF PERSONNEL RECORDS

It is recommended that Board Policy 4.10, Privacy of Personnel Records, be revised to clarify who is able to see anonymous comments submitted as part of a review of University personnel.

RECOMMENDATION: It is recommended that the Board of Trustees revises Board Policy 4.10 Privacy of Personnel Records as presented.

PROPOSED REVISION TO BOARD OF TRUSTEES POLICY 4.10

RED = ADD
~~STRIKETHROUGH~~ = DELETE

4.10 Privacy of Personnel Records

To the extent permitted by law, Michigan Tech seeks to protect the privacy of its employees' personnel records. The University also seeks to protect the privacy of those who provide feedback as part of a review process. To that end, and in order to ensure that the process of conducting surveys to provide input into employee evaluations supports the goal of ongoing continuous improvement while honoring the needs to maintain collegial and respectful communications and protect the interests of students, faculty, staff, and the University as a whole, anonymous comments made as part of a survey related to employee performance may only be shared with the supervisor of the person being evaluated and with the members of any committee charged by the supervisor to assist with the evaluation process by collecting and summarizing feedback from specified stakeholders. In the case of evaluations of department chairs and deans, these comments will also be shared with the provost and president. Comments may only be shared further if necessary to address a violation of university codes of conduct or a violation of the law. This policy does not apply to instructor evaluations.

THE AMENDED POLICY SHALL READ AS FOLLOWS:

4.10 Privacy of Personnel Records

To the extent permitted by law, Michigan Tech seeks to protect the privacy of its employees' personnel records. The University also seeks to protect the privacy of those who provide feedback as part of a review process. To that end, and in order to ensure that the process of conducting surveys to provide input into employee evaluations supports the goal of ongoing continuous improvement while honoring the needs to maintain collegial and respectful communications and protect the interests of students, faculty, staff, and the University as a

whole, anonymous comments made as part of a survey related to employee performance may only be shared with the supervisor of the person being evaluated and with the members of any committee charged by the supervisor to assist with the evaluation process by collecting and summarizing feedback from specified stakeholders. In the case of evaluations of department chairs and deans, these comments will also be shared with the provost and president. Comments may only be shared further if necessary to address a violation of university codes of conduct or a violation of the law. This policy does not apply to instructor evaluations.

VIII-K. REVISION TO BOARD POLICY 6.1. FACULTY DEFINITIONS

It is recommended that Board Policy 6.1, Faculty Definitions, be revised to redefine the ranks currently associated with non-tenure-track faculty lecturer-line titles as follows.

- Lecturer to Assistant Teaching Professor
- Senior Lecturer to Associate Teaching Professor
- Principal Lecturer to Teaching Professor

RECOMMENDATION: It is recommended that the Board of Trustees revises Board Policy 6.1 Faculty Definitions as presented.

PROPOSED REVISION TO BOARD OF TRUSTEES POLICY 6.01
Based on Senate Proposal 38-22 https://www.mtu.edu/senate/policies-procedures/proposals-year/2021-22/38-22-tracked.pdf with minor editorial revisions)

PURPLE = ADD
~~RED STRIKETHROUGH~~ = DELETE

6.1 Faculty Definitions

~~The faculty comprises two groups: "tenured and tenure-track faculty" and "non-tenure-track faculty". The "tenured and tenure-track faculty"~~ The faculty comprises individuals holding the following ranks:

- ~~of~~ assistant professor, associate professor, or professor (collectively referred to as "tenured and tenure-track faculty"); ~~. The "non-tenure-track faculty" comprises individuals holding the rank of instructor,~~
- ~~lecturer~~assistant teaching professor, ~~senior lecturer~~associate teaching professor, ~~principal lecturer~~or teaching professor;~~,~~
- librarian, senior librarian, or principal librarian~~,~~;
- archivist, senior archivist, or principal archivist~~,~~;
- instructor;
- professor of practice~~,~~;
- research assistant professor, research associate professor, or research professor;
- visiting ~~(~~assistant professor, visiting ~~/~~associate professor, visiting ~~/~~professor, or visiting professor of practice~~) faculty,~~ ;
- adjunct ~~(~~assistant professor, adjunct associate professor, adjunct~~assistant~~ professor, adjunct assistant teaching professor, adjunct associate teaching professor, adjunct teaching professor, adjunct instructor, ~~lecturer, senior lecturer, principal lecturer, librarian, senior librarian, principal librarian, archivist, senior archivist, principal archivist,~~ or adjunct professor of practice~~) faculty,~~ ;
- affiliated assistant ~~(~~professor, affiliated associate professor, affiliated~~assistant~~ professor, affiliated assistant teaching professor, affiliated associate teaching professor, affiliated

teaching professor, affiliated instructor, ~~lecturer, senior lecturer, principal lecturer, librarian, senior librarian, principal librarian, archivist, senior archivist, principal archivist,~~ affiliated professor of practice, affiliated research assistant professor, affiliated research ~~/~~associate professor, affiliated research~~/~~ professor, or affiliated emeritus professor~~) faculty, research (assistant/associate/professor) faculty, ~~;

- ROTC faculty~~,~~;
- and~~or~~ emeritus faculty.

"Learned professions" shall mean those professions ~~(or members thereof)~~ whose members are skilled in a calling or vocation requiring advanced knowledge as evidenced by a specific degree from a recognized College or University.

"Engaged in teaching" shall be interpreted to mean that the person is to teach during each academic semester of the normal academic year.

"Appointed by the Dean of the Graduate School" shall imply appointment to the Graduate Faculty as defined by the Graduate Council. Such appointment is limited to those with advanced degrees or equivalent experience, as well as interest and experience in research or teaching ~~on~~ at the graduate level.

"Equivalent experience" shall be determined by the President of the University.

The Faculty of the University

The President shall hire the faculty of the University which shall consist of the Undergraduate and Graduate Faculties.

Each faculty member shall qualify for one or more of the following defined faculties.

1. The Undergraduate Faculty consists of the members of the learned professions who are engaged in teaching for a degree in one of the learned professions and/or direct supervision thereof.
2. The Graduate Faculty consists of members of the faculty who have been appointed by the Dean of the Graduate School to be members of the Graduate Faculty.

Administrative officials of the University and members of staff, may be accorded membership of the faculties and such membership shall be within a specific department or ~~school~~ college of the University.

This policy shall be administered in accordance with procedures recommended by the Senate and approved by the Provost and Senior Vice President for Academic Affairs.

History

- 06/07/1968
- 01/28/1982
- 03/21/1986: deleted "rank" and "member" definition and Research Faculty
- 11/23/1986: Changed Dean of Research and the Graduate School title
- 03/23/1990
- 11/17/1995: Clarify faculty ranks

- 08/03/2000: Changed Executive Vice President and Provost title to Provost and Senior Vice President for Academic and Student Affairs
- 12/15/2000: Changed quarter to semester
- 07/15/2010: Was previously Policy 16.1. Renumbered, Vice Presidential title corrected, various faculty designations corrected to correlate with present practice.
- 05/04/2018: Revised to redefine the ranks associated with affiliated and adjunct faculty at Michigan Tech.
- 05/03/2019: Revised to redefine the ranks associated with non-tenure-track faculty to include librarians and archivists.
- 4/29/2022: Revised to update titles associated with some instructional-track faculty (those formerly known as lecturers, senior lecturers, and principal lectures) and to correct misalignment between Board policy and the Faculty Handbook (related to the application of adjunct or affiliated modifiers to the librarian and archivist ranks) based on the president's approval of Senate Proposal 38-22.

THE AMENDED POLICY SHALL READ AS FOLLOWS:

6.1 Faculty Definitions

The faculty comprises individuals holding the following ranks:

- assistant professor, associate professor, or professor (collectively referred to as "tenured and tenure-track faculty");
- assistant teaching professor, associate teaching professor, or teaching professor;
- librarian, senior librarian, or principal librarian;
- archivist, senior archivist, or principal archivist;
- instructor;
- professor of practice;
- research assistant professor, research associate professor, or research professor;
- visiting assistant professor, visiting associate professor, visiting professor, or visiting professor of practice;
- adjunct assistant professor, adjunct associate professor, adjunct professor, adjunct assistant teaching professor, adjunct associate teaching professor, adjunct teaching professor, adjunct instructor, or adjunct professor of practice;
- affiliated assistant professor, affiliated associate professor, affiliated professor, affiliated assistant teaching professor, affiliated associate teaching professor, affiliated teaching professor, affiliated instructor, affiliated professor of practice, affiliated research assistant professor, affiliated research associate professor, affiliated research professor, or affiliated emeritus professor;
- ROTC faculty;
- and emeritus faculty.

"Learned professions" shall mean those professions whose members are skilled in a calling or vocation requiring advanced knowledge as evidenced by a specific degree from a recognized College or University.

"Engaged in teaching" shall be interpreted to mean that the person is to teach during each academic semester of the normal academic year.

"Appointed by the Dean of the Graduate School" shall imply appointment to the Graduate Faculty as defined by the Graduate Council. Such appointment is limited to those with advanced degrees or equivalent experience, as well as interest and experience in research or teaching at the graduate level.

"Equivalent experience" shall be determined by the President of the University.

The Faculty of the University

The President shall hire the faculty of the University which shall consist of the Undergraduate and Graduate Faculties.

Each faculty member shall qualify for one or more of the following defined faculties.

3. The Undergraduate Faculty consists of the members of the learned professions who are engaged in teaching for a degree in one of the learned professions and/or direct supervision thereof.
4. The Graduate Faculty consists of members of the faculty who have been appointed by the Dean of the Graduate School to be members of the Graduate Faculty.

Administrative officials of the University and members of staff, may be accorded membership of the faculties and such membership shall be within a specific department or college of the University.

This policy shall be administered in accordance with procedures recommended by the Senate and approved by the Provost and Senior Vice President for Academic Affairs.

History

- 06/07/1968
- 01/28/1982
- 03/21/1986: deleted "rank" and "member" definition and Research Faculty
- 11/23/1986: Changed Dean of Research and the Graduate School title
- 03/23/1990
- 11/17/1995: Clarify faculty ranks
- 08/03/2000: Changed Executive Vice President and Provost title to Provost and Senior Vice President for Academic and Student Affairs
- 12/15/2000: Changed quarter to semester
- 07/15/2010: Was previously Policy 16.1. Renumbered, Vice Presidential title corrected, various faculty designations corrected to correlate with present practice.
- 05/04/2018: Revised to redefine the ranks associated with affiliated and adjunct faculty at Michigan Tech.

- 05/03/2019: Revised to redefine the ranks associated with non-tenure-track faculty to include librarians and archivists.
- 05/03/2019: Revised to redefine the ranks associated with non-tenure-track faculty to include librarians and archivists.
- 4/29/2022: Revised to update titles associated with some instructional-track faculty (those formerly known as lecturers, senior lecturers, and principal lectures) and to correct misalignment between Board policy and the Faculty Handbook (related to the application of adjunct or affiliated modifiers to the librarian and archivist ranks) based on the president's approval of Senate Proposal 38-22.

VIII-K.1. RESOLUTION HONORING PROVOST

RESOLUTION

Whereas, Dr. Jacqueline E. Huntoon, has honorably served Michigan Technological University as its Provost and Senior Vice President for Academic Affairs for the past seven years;

Whereas, through tireless work, exceptional skill, sound judgment, and uncommon grace, Dr. Huntoon built bridges and fostered collaboration both within the University and with outside partners;

Whereas, through an entrepreneurial spirit and creative, out-of-the box thinking, Dr. Huntoon brought new opportunities to students, faculty, colleges, and the University;

Whereas, Dr. Huntoon's calm, steadfast leadership contributed to the ongoing advancement of the legislative intent and strategic plan of the University; now therefore be it

Resolved, that the members of the Board of Trustees hereby express their appreciation and gratitude to Dr. Huntoon for her outstanding leadership and her exceptional contributions to Michigan Technological University as Provost; and be it further

Resolved, that as a token of its respect and appreciation for her distinguished service as Provost and Senior Vice President for Academic Affairs, the Board of Trustees grants Dr. Huntoon a period of professional leave from July 1, 2022, through December 31, 2022; and be it further

Resolved, that on this 29th day of April in the year 2022, the members of the Board of Trustees wish Dr. Huntoon continued success and every happiness in her future endeavors.

RECOMMENDATION: That the Board of Trustees honors Dr. Jacqueline Huntoon, with a resolution of appreciation for her distinguished service as Provost.

VIII-L. REVISION TO BOARD POLICY 1.19 PRESIDING OFFICER – CHAIR AND VICE-CHAIR

RECOMMENDATION: That the Board of Trustees amends policy 1.19 Presiding Officer – Chair and Vice-Chair as presented herein.

PROPOSED REVISION TO BOARD OF TRUSTEES POLICY 1.19

PURPLE = ADD
~~STRIKETHROUGH~~ = DELETE

At the last regular meeting of the ~~fiscal~~ calendar year, the Board shall elect a Chair, to take office at the first meeting in the following ~~fiscal~~ calendar year, to preside at meetings of the Board when in formal session or when meeting as a committee of the whole and shall also elect a Vice-Chair to preside in the absence of the Chair.

THE AMENDED POLICY SHALL READ AS FOLLOWS:

At the last regular meeting of the calendar year, the Board shall elect a Chair, to take office at the first meeting in the following calendar year, to preside at meetings of the Board when in formal session or when meeting as a committee of the whole and shall also elect a Vice-Chair to preside in the absence of the Chair.

VIII-M. REVISION TO BOARD POLICY 5.01-5.03, EQUAL OPPORTUNITY, DISCRIMINATION, OR HARASSMENT

RECOMMENDATION: That the Board of Trustees approves the revision to Board Policy 5.1. 5.2, and 5.3 Equal Opportunity, Discrimination, and Harassment, as presented herein.

PROPOSED REVISION TO BOARD OF TRUSTEES POLICY 5.01-5.03

PURPLE = ADD
~~STRIKETHROUGH~~ = DELETE

~~5.01-5.03~~ 5.1-5.3

Equal Opportunity, Discrimination or Harassment

5.1 Prohibition of Discrimination and Harassment

Michigan Technological University is a diverse community of and for scholars. This community requires an environment of trust and openness where productive work, teaching, and learning can thrive. The University recognizes the necessity of protecting First Amendment rights and encouraging free speech, but also recognizes that certain conduct can threaten the mutual respect that is the foundation of scholarly communities. This policy is intended to secure the freedom of expression guaranteed by the United States Constitution while maintaining the trust and mutual respect that are vital to a diverse university community.

This policy does not abrogate other policies, rights, and regulations set forth by Michigan Technological University. Further, federal and state laws will be enforced notwithstanding any provision of this policy.

~~The~~ Civil rights statutes prohibit various forms of ~~discrimination including on the basis of race, color, religion, creed, national origin, gender, marital status, age, disability, height, weight, or veteran status.~~ discrimination in employment and in educational programs and activities on the basis of race, religion, color, national origin, age, sex, sexual orientation, gender identity, height, weight, genetic information, or marital status, disability, or veteran status.

At Michigan Technological University there is no place for discrimination and/or discriminatory harassment prohibited by applicable federal or state civil rights laws. ~~Title VII, 42 U.S.C § 1981, 42 U.S.C. § 1983, Title VI, Title IX, the Americans With Disabilities Act, the Age Discrimination in Employment Act, the Michigan Handicappers' Act, the Michigan Ethnic Intimidation Act, the Michigan Elliott-Larsen Civil Rights Act, the United States or Michigan Constitutions or Board of Trustees Policy.~~ ~~These behaviors~~ Such conduct by any member of the Michigan Technological University community ~~are~~ is prohibited and individuals engaging in these behaviors are subject to disciplinary procedures ranging from reprimand to termination or expulsion.

This policy shall be administered in accordance with procedures established by the Executive Director of Institutional Equity.

5.2 Equal Opportunity

In keeping with its responsibilities as an educational institution, Michigan Technological University is committed to a policy of affording equal opportunity to all of its employees, students, applicants for employment and applicants for admission without regard to ~~race, religion, color, national origin, age, sex, sexual orientation, gender identity, height, weight, genetic information, or marital status~~ race, religion, color, national origin, age, sex, sexual orientation, gender identity, height, weight, genetic information, or marital status, disability, or veteran status. The University is also committed to a policy of educating and employing disabled individuals and veterans without discrimination. These policies are to be implemented with due regard for the

relative qualifications of all involved.

5.3 Discrimination Based on Sex

Federal and State law prohibits discrimination in employment, in the utilization of educational facilities, and in educational programs and activities based on sex. Such discrimination includes gender discrimination, sexual harassment, and sexual ~~violence~~ misconduct. The policy of Michigan Technological University is that such sex discrimination is prohibited.

The mission of Michigan Technological University is to provide a quality education for its students and a fair and responsible work environment for its employees. Sexual discrimination, as described in the previous paragraph, directed towards employees by supervisors, students, or other employees, or towards students by faculty, employees, or other students, is absolutely prohibited. Upon receipt of information that sexual discrimination has occurred and after verification of such information, the University shall take prompt corrective action, up to and including dismissal from the University or discharge from University employment.

Students, employees, faculty members, or applicants for admission or employment who feel that they have been subjected to discrimination based on sex should notify the Title IX Coordinator in the Office of Institutional Equity.

Nothing in this policy will prevent persons from pursuing any legal remedy which may be available to them.

This policy shall be administered in accordance with procedures established by the Executive Director of Institutional Equity.

THE AMENDED POLICY SHALL READ AS FOLLOWS:

5.1-5.3

Equal Opportunity, Discrimination or Harassment

5.1 Prohibition of Discrimination and Harassment

Michigan Technological University is a diverse community of and for scholars. This community requires an environment of trust and openness where productive work, teaching, and learning can thrive. The University recognizes the necessity of protecting First Amendment rights and encouraging free speech, but also recognizes that certain conduct can threaten the mutual respect that is the foundation of scholarly communities. This policy is intended to secure the freedom of expression guaranteed by the United States Constitution while maintaining the trust and mutual respect that are vital to a diverse university community.

This policy does not abrogate other policies, rights, and regulations set forth by Michigan Technological University. Further, federal and state laws will be enforced notwithstanding any provision of this policy.

Civil rights statutes prohibit various forms of discrimination in employment and in educational programs and activities on the basis of race, religion, color, national origin, age, sex, sexual orientation, gender identity, height, weight, genetic information, or marital status, disability, or veteran status.

At Michigan Technological University there is no place for discrimination and/or discriminatory harassment prohibited by applicable federal or state civil rights laws. Such conduct by any member of the Michigan Technological University community is prohibited and individuals engaging in these behaviors are subject to disciplinary procedures ranging from reprimand to termination or expulsion.

This policy shall be administered in accordance with procedures established by the Executive Director of Institutional Equity.

5.2 Equal Opportunity

In keeping with its responsibilities as an educational institution, Michigan Technological University is committed to a policy of affording equal opportunity to all of its employees, students, applicants for employment and applicants for admission without regard to race, religion, color, national origin, age, sex, sexual orientation, gender identity, height, weight, genetic information, or marital status, disability, or veteran status. The University is also committed to a policy of educating and employing disabled individuals and veterans without discrimination. These policies are to be implemented with due regard for the relative qualifications of all involved.

5.3 Discrimination Based on Sex

Federal and State law prohibits discrimination in employment, in the utilization of educational facilities, and in educational programs and activities based on sex. Such discrimination includes gender discrimination, sexual harassment, and sexual misconduct. The policy of Michigan Technological University is that such sex discrimination is prohibited.

The mission of Michigan Technological University is to provide a quality education for its students and a fair and responsible work environment for its employees. Sexual discrimination, as described in the previous paragraph, directed towards employees by supervisors, students, or other employees, or towards students by faculty, employees, or other students, is absolutely prohibited. Upon receipt of information that sexual discrimination has occurred and after verification of such information, the University shall take prompt corrective action, up to and including dismissal from the University or discharge from University employment.

Students, employees, faculty members, or applicants for admission or employment who feel that they have been subjected to discrimination based on sex should notify the Title IX Coordinator in the Office of Institutional Equity.

Nothing in this policy will prevent persons from pursuing any legal remedy which may be available to them.

This policy shall be administered in accordance with procedures established by the Executive Director of Institutional Equity.

VIII-N. FY2023 GENERAL FUND OPERATING BUDGET

The general fund budget was developed based on assumptions regarding tuition and state appropriations. However, when the State budget is approved by the Legislature, if there are changes from these assumptions, the Administration is requesting that the Board allow them the flexibility to revise the budget to reflect a change in appropriations and/or tuition cap while continuing to maintain a balanced budget.

RECOMMENDATION: That the Board of Trustees approves the FY2023 General Fund Operating Budget as presented, and authorizes the Administration to revise the general fund operating budget to reflect any changes in state appropriations and/or tuition cap while maintaining a balanced budget and informing the Board Audit and Finance Committee of any such changes that may be necessary.

Michigan Technological University

Fiscal Year 2023 General Fund Budget

	Approved Budget	Proposed Budget		
	Fiscal Year 2022	**Fiscal Year 2023**	**Variance**	
Operating Revenues				
Tuition and Fees	$ 145,821,773	$ 160,872,103	$ 15,050,330	10.3%
Federal Grants and Contracts	40,000	40,000	-	0.0%
State & Local Gov't Grants & Contracts	-	-	-	
Nongovernmental Grants & Contracts	-	-	-	
Indirect Cost Recoveries	16,700,000	16,700,000	-	0.0%
Educational Activities/Misc. Revenues	315,000	315,000	-	0.0%
Student Resident Fees	-	-	-	
Sales and Services of Dept Activities	-	-	-	
	$ 162,876,773	$ 177,927,103	$ 15,050,330	9.2%
Operating Expenses				
Staff S&W	$ (38,273,086)	$ (40,747,168)	$ (2,474,082)	6.5%
Faculty S&W	(47,610,656)	(50,635,632)	(3,024,976)	6.4%
Grad Student S&W	(4,788,285)	(4,954,462)	(166,177)	3.5%
Undergrad Student S&W	(938,068)	(938,068)	-	0.0%
Fringe Benefits	(38,079,046)	(40,429,407)	(2,350,361)	6.2%
Supplies & Services	(14,038,683)	(14,383,342)	(344,659)	2.5%
Financial Aid Scholarships & Fellowships	(51,957,568)	(59,750,657)	(7,793,089)	15.0%
Utilities	(4,127,048)	(4,127,048)	-	0.0%
Contingency/Carryforward Reserve	(5,000,000)	(5,000,000)	-	0.0%
	$ (204,812,439)	$ (220,965,782)	$ (16,153,343)	7.9%
Transfers				
Mandatory	$ (740,028)	$ (740,028)	$ -	0.0%
Non-Mandatory	(12,541,612)	(12,751,564)	(209,952)	1.7%
Mandatory/Non-Mandatory	$ (13,281,640)	$ (13,491,592)	$ (209,952)	1.6%
Nonoperating Revenues (Expenses)				
State Appropriations	$ 51,303,152	$ 52,319,195	$ 1,016,043	2.0%
Gift Income	3,129,077	3,411,077	282,000	9.0%
Investment Income	800,000	800,000	-	0.0%
Interest Expense	-	-	-	
	$ 55,232,229	$ 56,530,272	$ 1,298,043	2.4%
Net Income (Loss)	**$ 14,923**	**$ (0)**	**$ (14,923)**	

Michigan Technological University
Proposed 2022-23 Semester Tuition Rates

Undergraduate

	Resident		*Non-Resident*	
	Tuition Rate per Credit Hour <12 and >18	Plateau Tuition Rate 12 - 18 Credits	Tuition Rate per Credit Hour <12 and >18	Plateau Tuition Rate 12 - 18 Credits
Lower Division				
All Majors	$653	$8,648	$1,454	$19,628
Upper Division				
Tier 1	$727	$9,565	$1,548	$20,890
Tier 2	$752	$9,767	$1,575	$21,084
Tier 3	$867	$10,501	$1,705	$21,929

NOTE: Per Credit Hour Rate Will Apply To Undergraduate Students Enrolled Summer Semester

Tier 1 Majors: Business, Economics, Humanities, Mathematical Sciences, Social Sciences, Visual & Performing Arts

Tier 2 Majors: Forest Resources, Environmental Science, Biological Sciences, Chemistry, Kinesiology & Integrative Physiology, Cognitive & Learning Sciences, Physics, Construction Management, Electrical Engineering Technology, Mechanical Engineering Technology

Tier 3 Majors: Engineering, Computer Science, Computer Network & Systems Admin., Surveying Engineering

Graduate

	Non-Engineering/ Computer Science	Engineering/ Computer Science
Standard Per Credit Rate	$1,228	$1,395
National Service Rate	$824	$935
Research Mode Rate	$405	$460

VIII- O. APPROVAL OF EXTERNAL AUDITOR

The University's external auditors (certified public accountants) perform interim audit work prior to the close of our June 30 fiscal year; therefore, it is desirable that they be appointed prior to the end of the fiscal year.

RECOMMENDATION: That the Board of Trustees authorizes the Treasurer to engage the certified public accounting firm Plante & Moran, PLLC to conduct the following audits for the fiscal year ending June 30, 2022:

1. The annual examination of the University's Financial Statements and Supplemental Information (all funds).

2. The annual examination of federal awards and federal student financial assistance programs, including Pell Grants, Education Opportunity Grants, Perkins Loans, College Work Student Programs, Part B Loans, and Higher Education Emergency Relief Fund.

3. The subsequent event review procedure for the State of Michigan Annual Comprehensive Financial Report.

VIII-P. MICHIGAN ARTS AND CULTURE COUNCIL

The Rozsa Center for the Performing Arts is preparing a proposal for submission to the Michigan Arts and Culture Council. The funds requested in this proposal will support the costs associated with artist fees for the annual Presenting Series that will include the following:

- Audiopharmacy campus walk, Reactivation of the "Listen!" mobile phone app project from summer 2021, with music by Adam Meckler and Libby Meyer tied to the Houghton Waterfront and the Quincy Mine trails. (July 1-October 9, 2022)
- NatGeo Speaker Series: Alize Carrere**--** *Adaptation* (Date TBD September 2022
- Lawrence the Band (Date TBD September 2022)
- Naila Ansari: The Movement of Joy—spoken word and dance performance, collaboration with the Samantha Eggy residency (September 29-30)
- American Ballet Theatre Studio Company (October 27-28, 2022)
- Rocky Horror Picture Show (late-night film) (October 29, 2022)
- Hairspray (January 17, 2023)
- Jay Jurden, Comedian OR partner with Winter Carnival Comedian (TBD spring 2023)
- So Percussion, featuring Shodekah Talifero—collaboration with Dr. Libby Meyer and new music initiatives. Residency will be Feb 28-March 2, with the culminating show on March 2. (February 28-March 2, 2023)
- Let's Eat: Class Acts and/or Family Show (week of March 6, 2023)
- NatGeo Speaker Series: Kobie Boykins—*Exploring Mars* (TBD March 2022)

The amount of the grant request is $30,000.

The Michigan Arts and Culture Council requires that proposals submitted to them for funding be authorized by the Board of Trustees.

RECOMMENDATION: That the Board of Trustees endorse the proposal from the Rozsa Center for the Performing Arts for submission to the Michigan Arts and Culture Council.

IX. REPORTS

A. Gamma-Ray Astronomy at Michigan Tech
Petra Huentemeyer, Director, Earth, Planetary, and Space Sciences Institute (EPSSI) and Professor, Physics

B. Provost Report
Jacqueline Huntoon, Provost

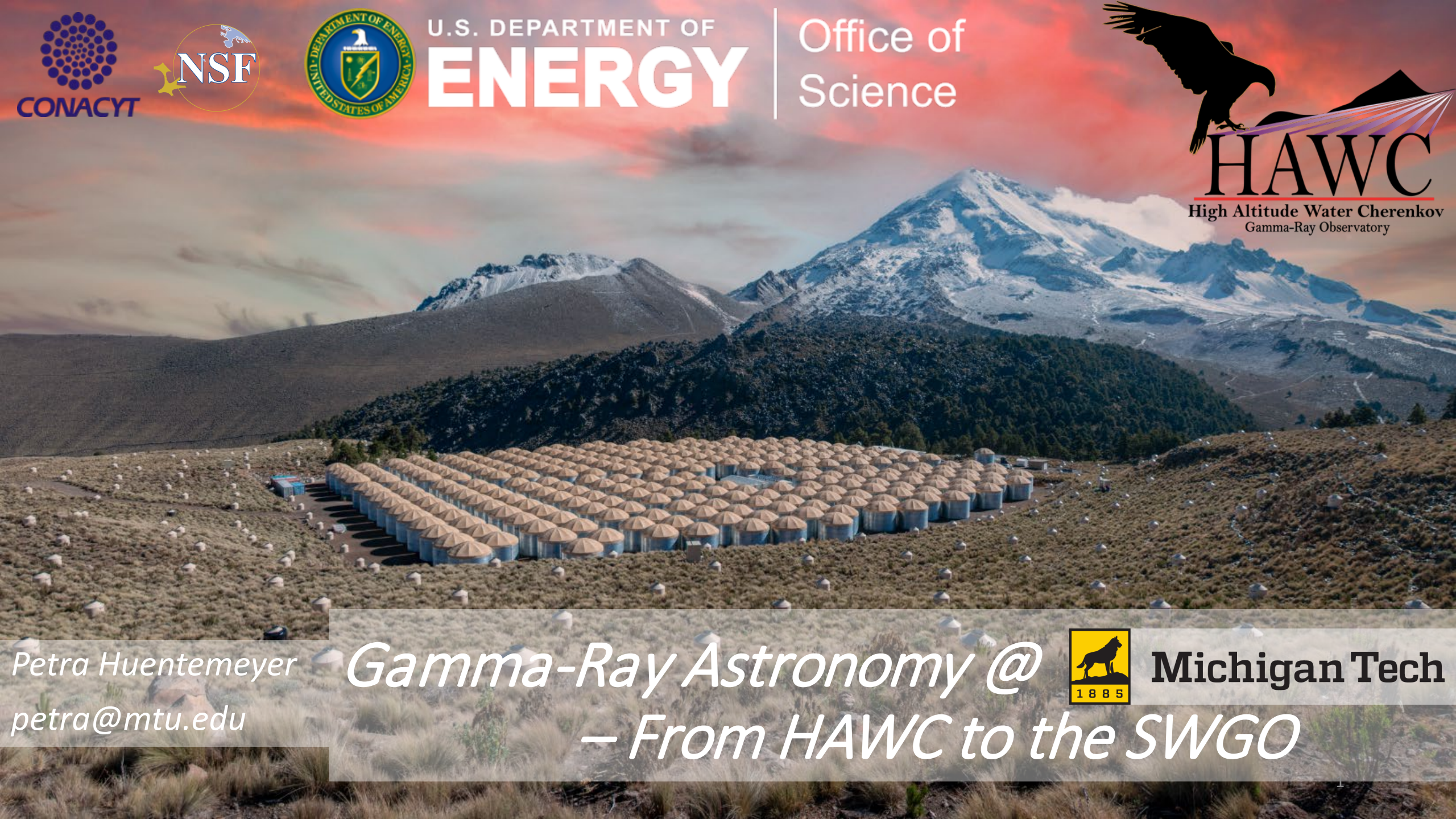
C. Undergraduate Student Government
Cheyenne Scott, President-elect

D. Graduate Student Government
Nathan Ford, President and Ranit Karmakar, President Elect

E. University Senate
Samuel Sweitz, President

IX-A. Gamma-Ray Astronomy at Michigan Tech

Petra Huentemeyer, Director, Earth, Planetary, and Space Sciences Institute (EPSSI) and Professor, Physics

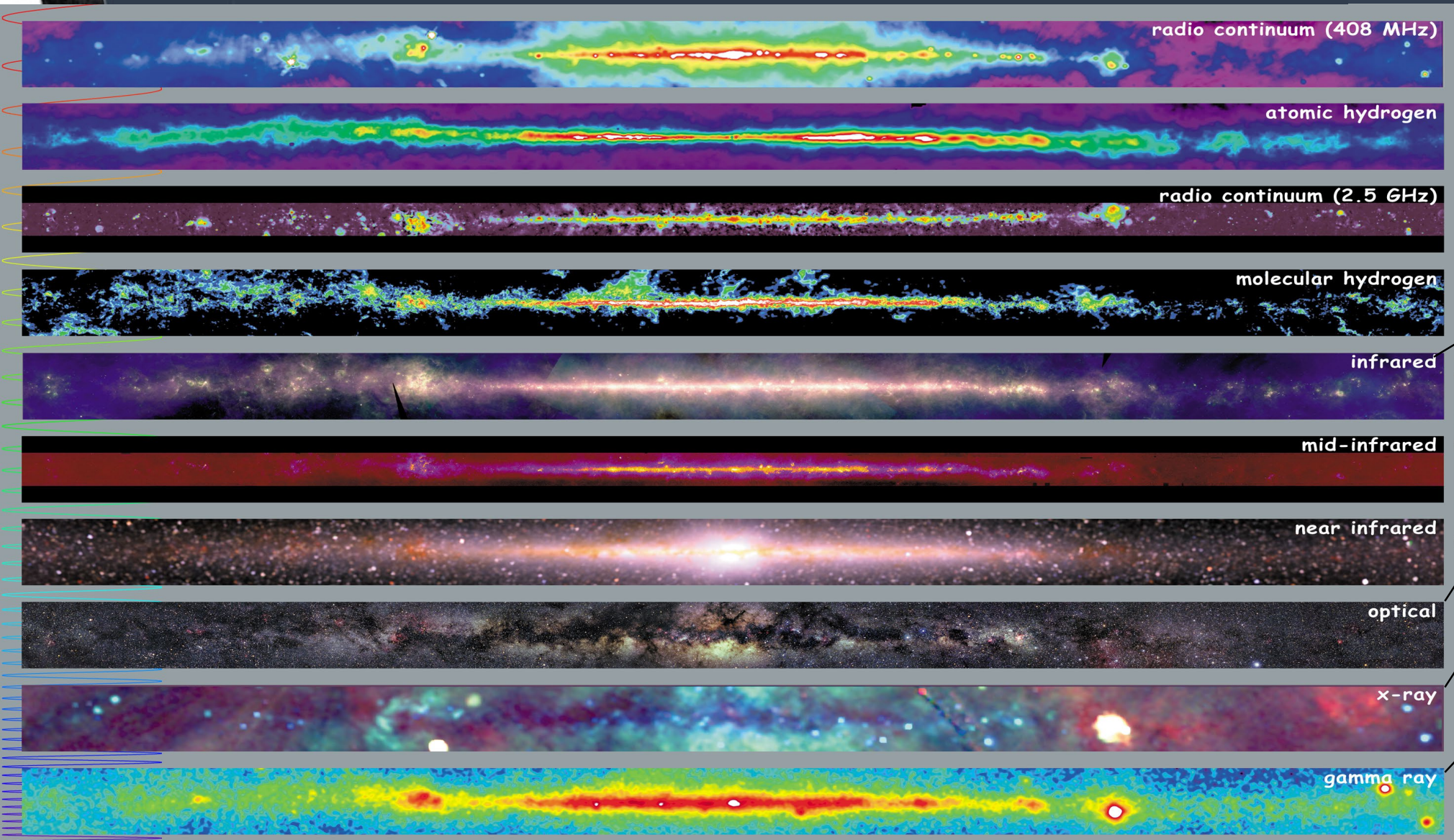


Gamma-Ray Astronomy @ – From HAWC to the SWGO

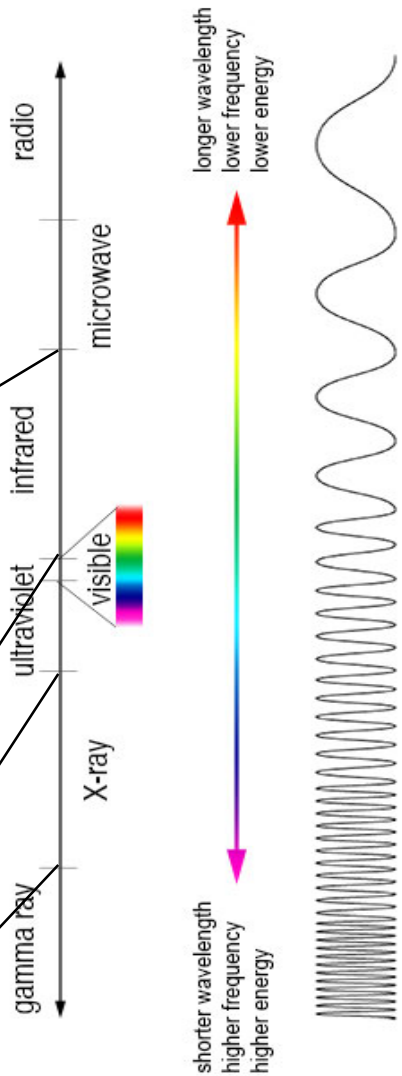
Petra Huentemeyer
petra@mtu.edu

Michigan Tech

NSF'S 10 BIG IDEAS



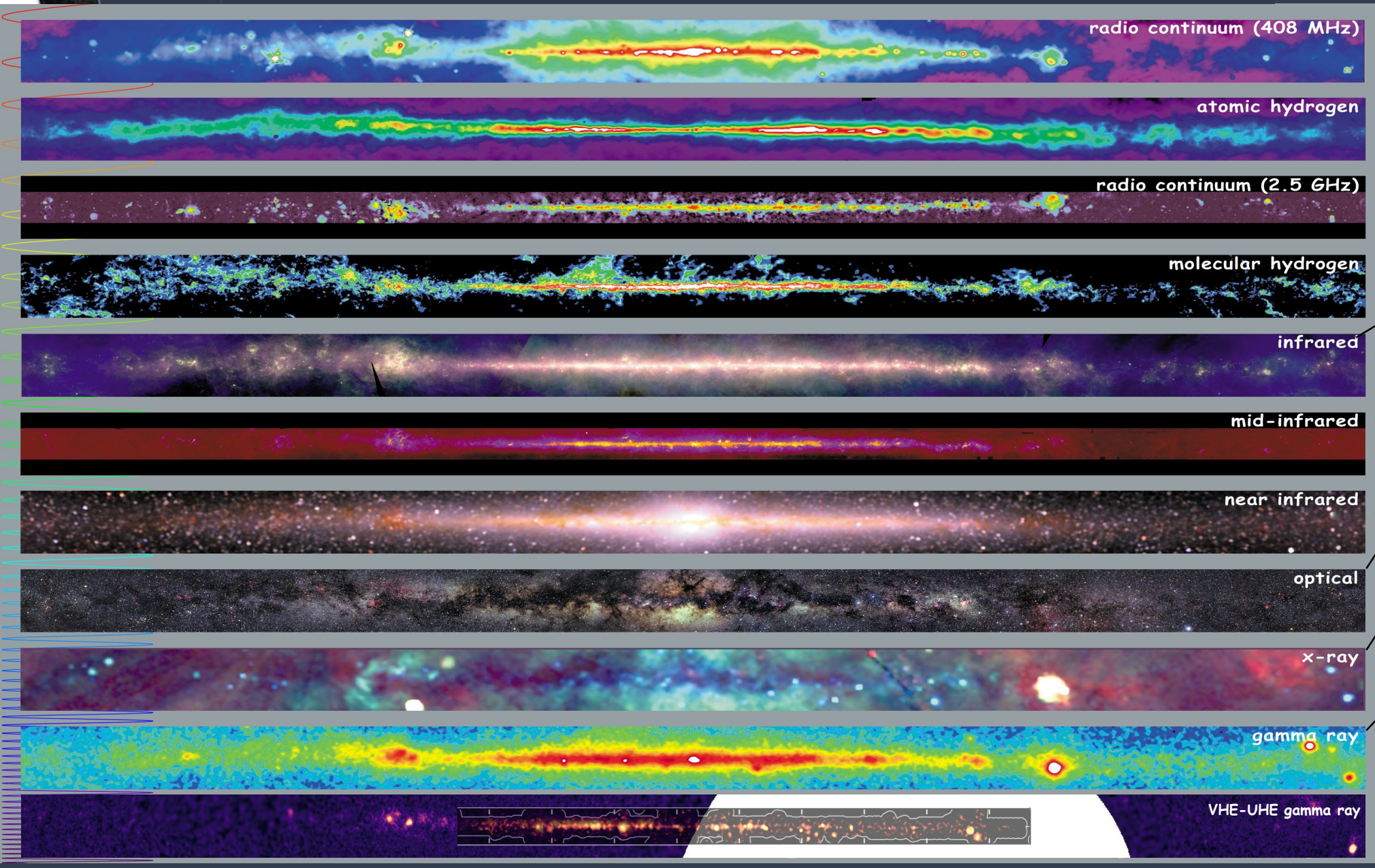
Windows on the Universe



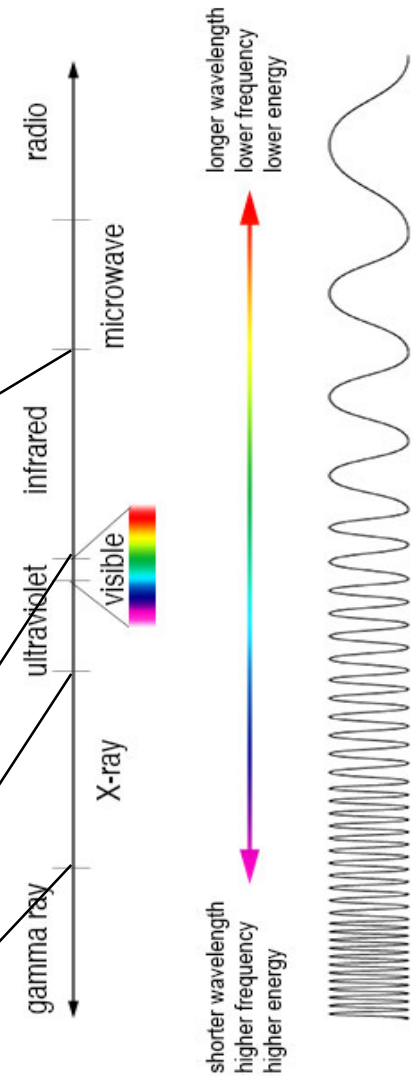
Multiwavelength Milky Way

Poster from 1996

NSF'S 10 BIG IDEAS

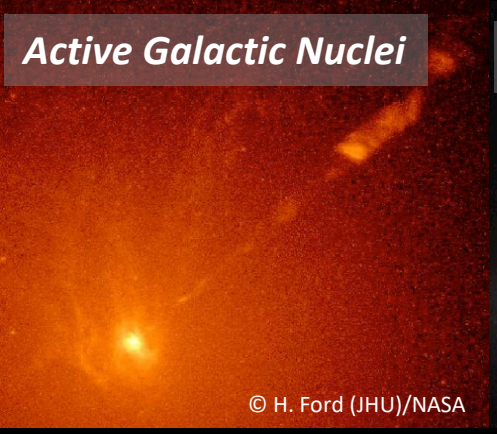


Windows on the Universe



Status 2021

Active Galactic Nuclei



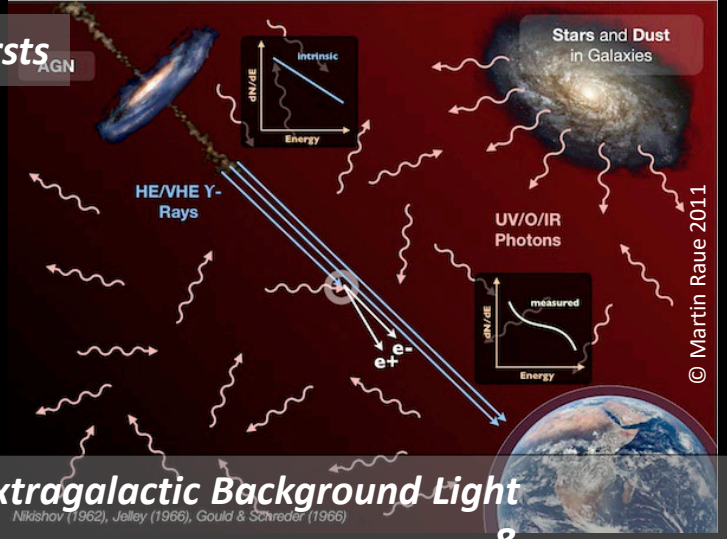
© H. Ford (JHU)/NASA

Starburst Galaxies

© NASA/STScI

"Naked Eye"Gamma-Ray Bursts

© NASA/SWIFT



Extragalactic Background Light
Nikishov (1962), Jelley (1966), Gould & Schreder (1966)

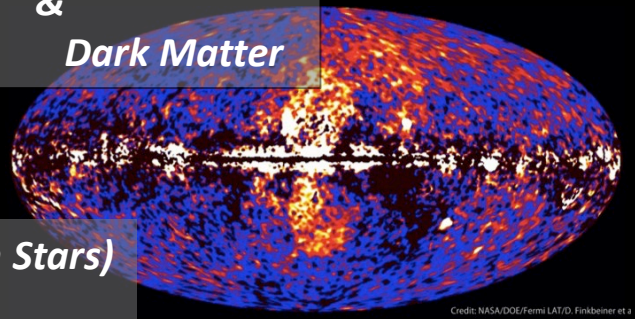
* (also sources of cosmic rays, neutrinos & gravitational waves)

Gamma-Ray* Sources

Windows Into the Non-Thermal Universe

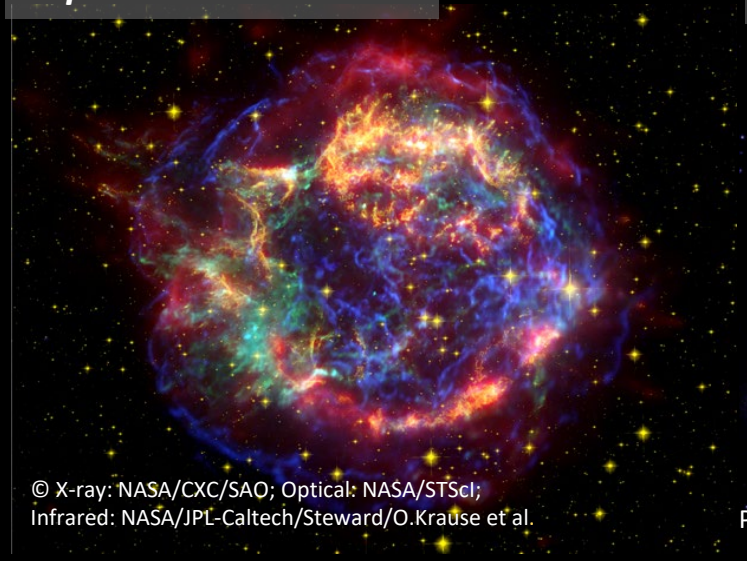
&

Dark Matter



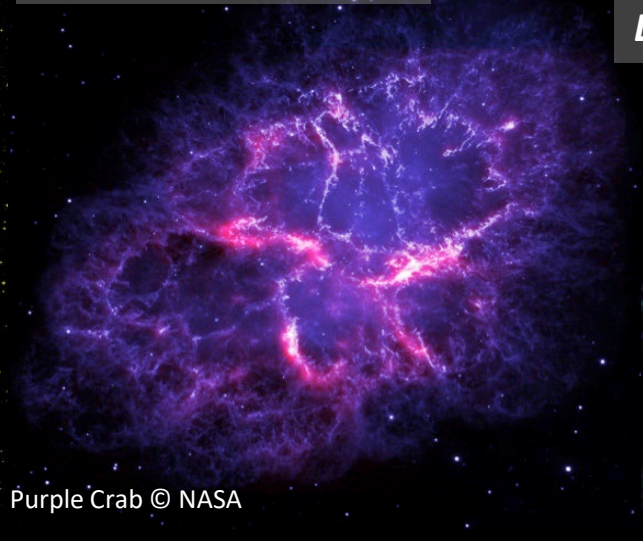
Credit: NASA/DOE/Fermi LAT/D. Finkbeiner et a

Super Nova Remnants



© X-ray: NASA/CXC/SAO; Optical: NASA/STScI; Infrared: NASA/JPL-Caltech/Steward/O.Krause et al.

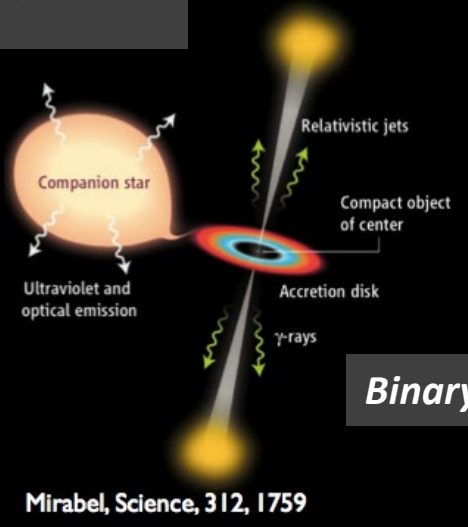
Pulsar Wind Nebulae



Purple Crab © NASA

Pulsars (Fast Spinning Neutron Stars)
&
Lorentz Invariance

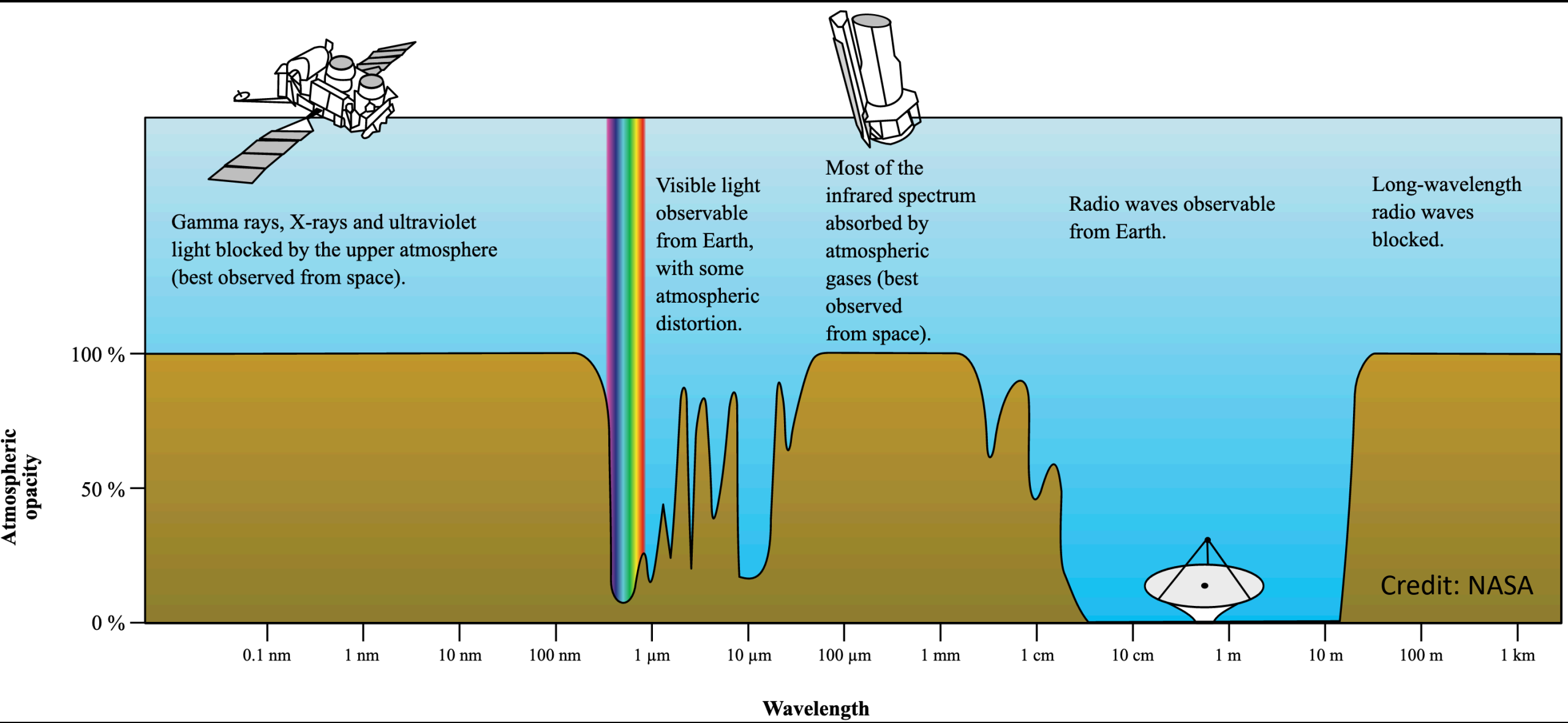
© NASA/Fermi



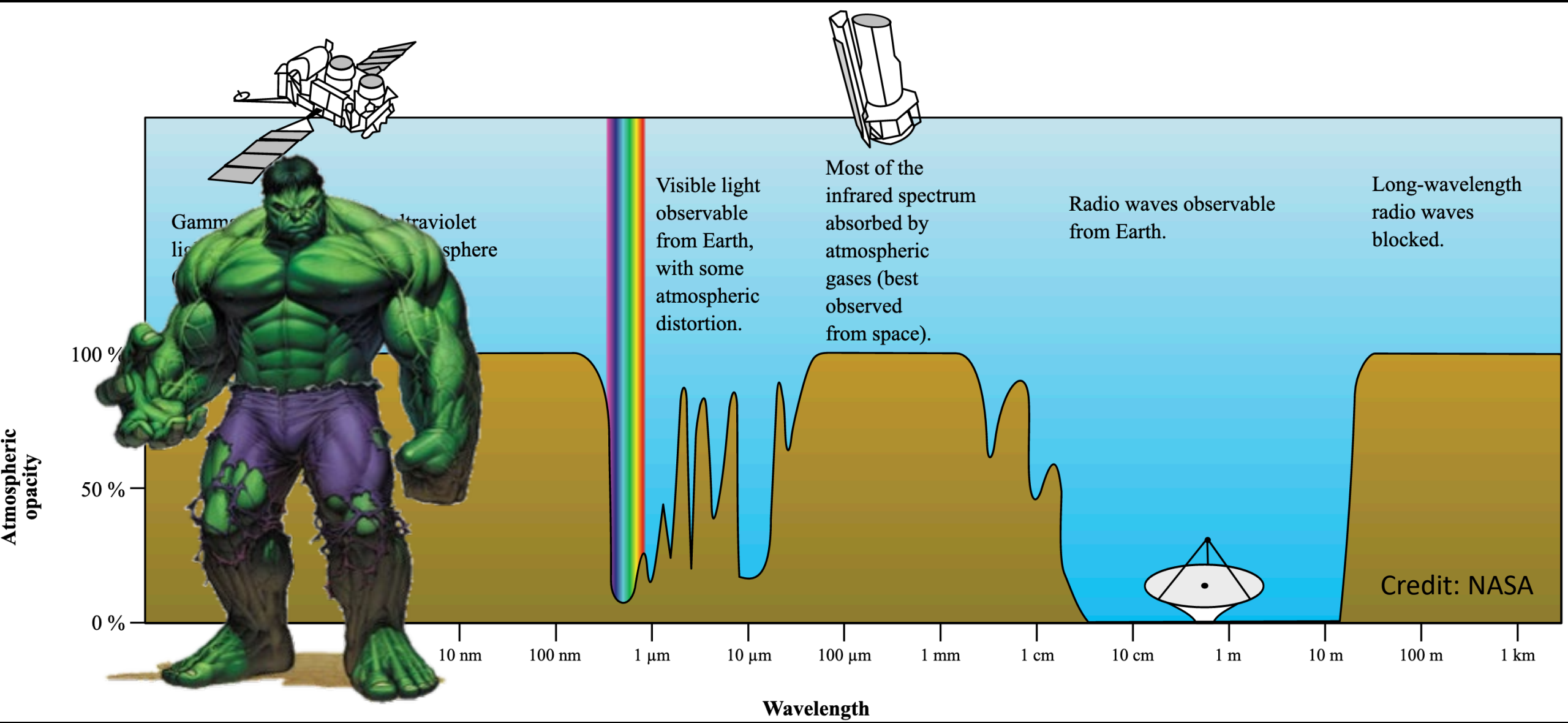
Mirabel, Science, 312, 1759

Binary Systems

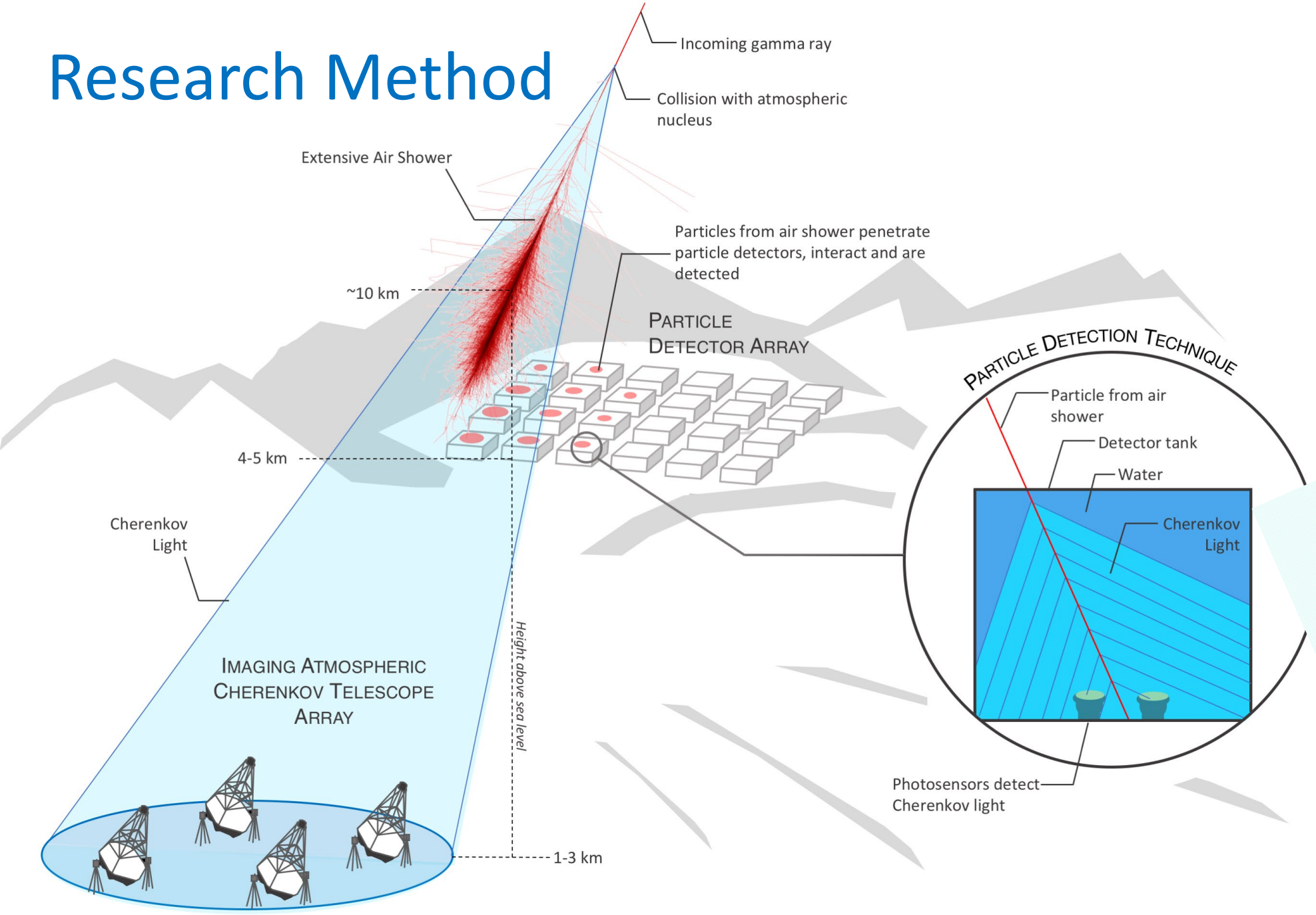
Multi-Wavelengths Observatories



Multi-Wavelengths Observatories



Research Method



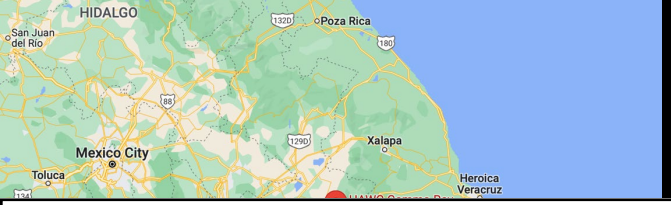
Advanced Test Reactor –
© Idaho/Argonne National Lab

Made by H. Seldon, wikipedia.org/public domain

Shower image, 100 GeV γ-ray adapted from: F. Schmidt, J. Knapp, "CORSIKA Shower Images", 2005, https://www-zeuthen.desy.de/~jknapp/fs/showerimages.html

Not to scale

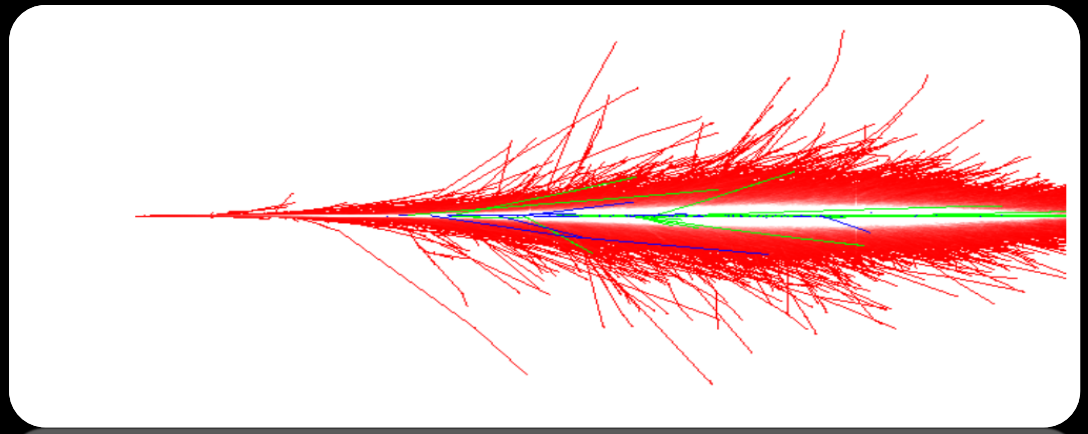
Wide-Field-of-View Ground-Based γ-Ray Observatories



Some Numbers:

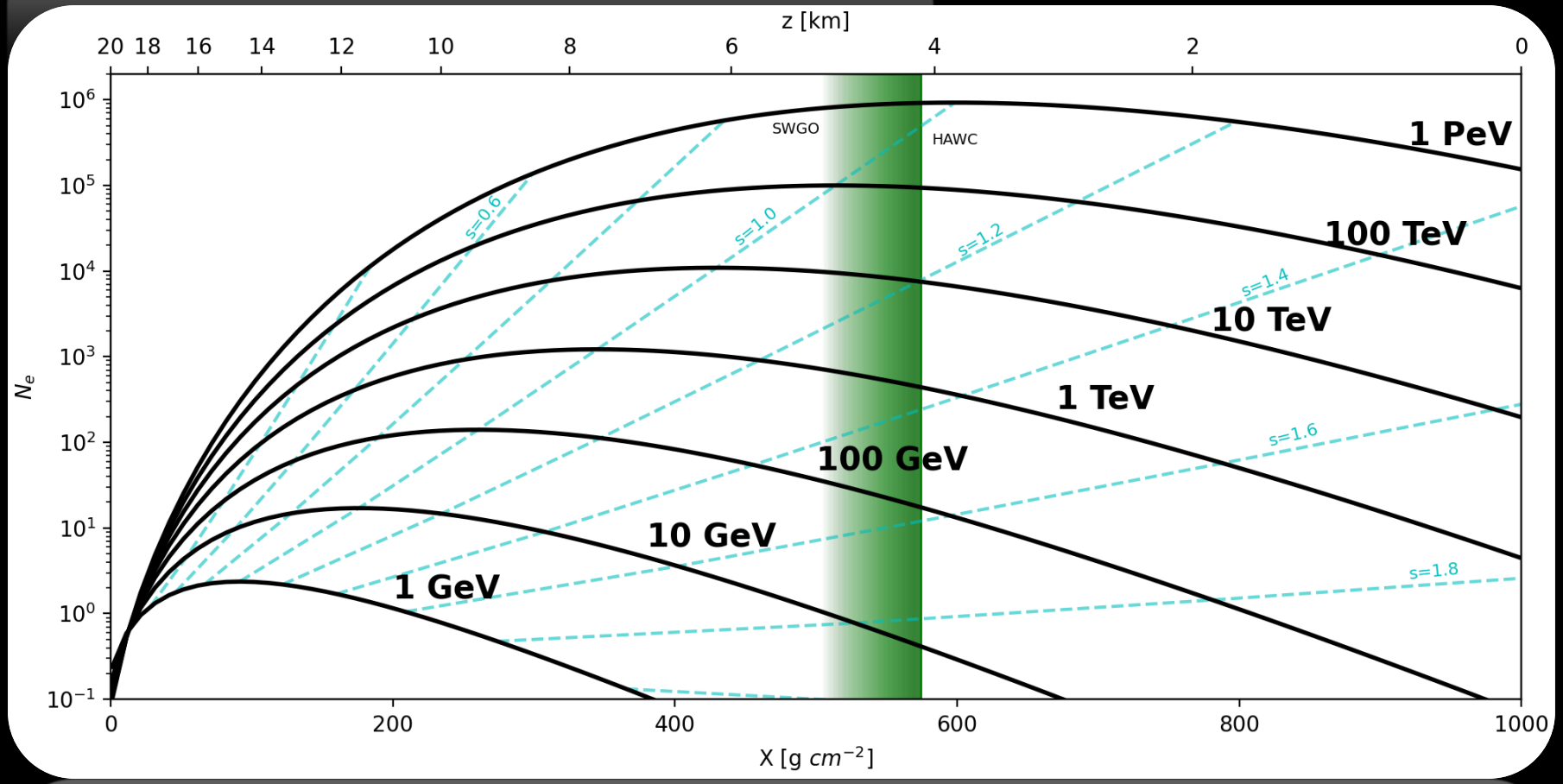
- ***Location:*** 19º N 97º W @ 4,100 m/13,451’ near Citlaltépetl (from Nahuatl *citlal(in)* = star, and *tepētl* = mountain), aka Pico de Orizaba

Why so High?

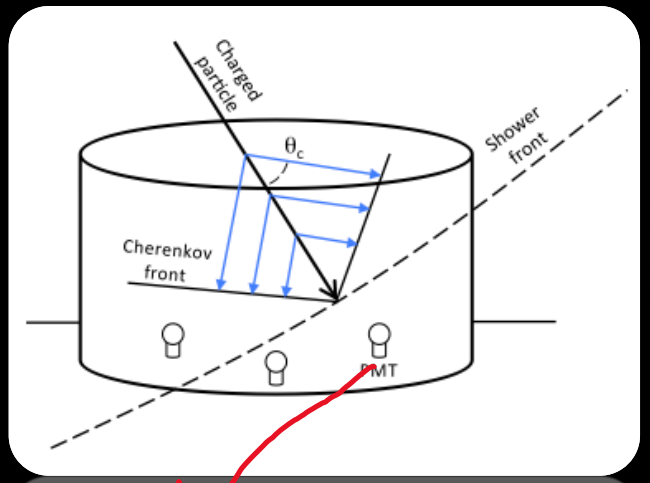


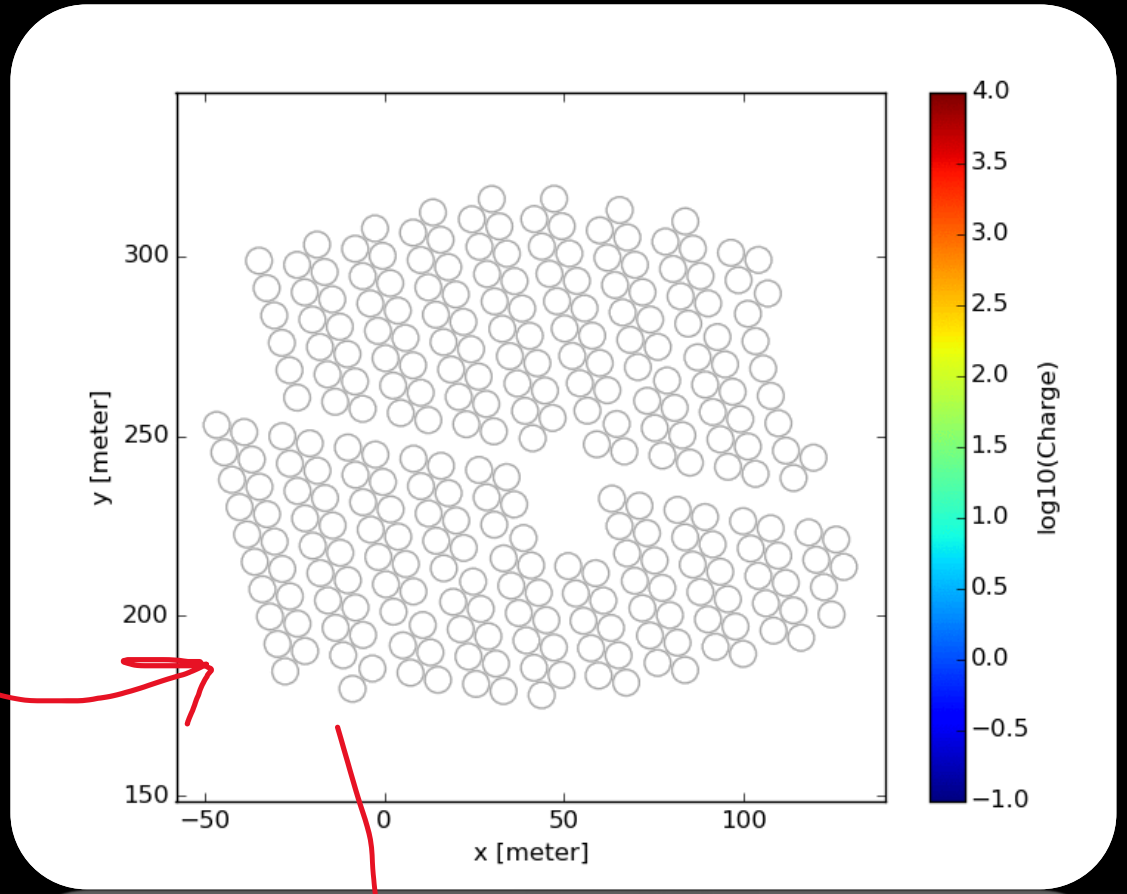
More particles detected

- ☛ More information
- ☛ More accurate & precise measurements

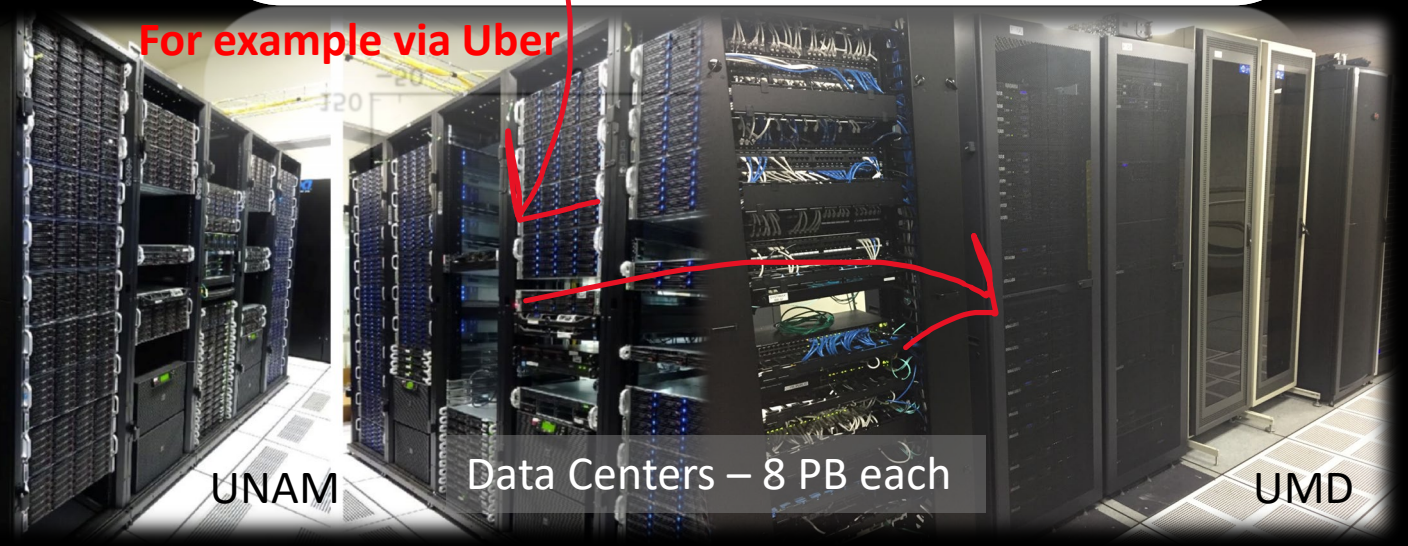


How to build an array?





For example via Uber



Total Cost of HAWC: ~ $16M

You Need Expertise of Many People in Different Places: The HAWC Collaboration

Spokesperson (US):	Petra Huentemeyer
Spokesperson (Mexico):	Alberto Carramiñana
Science Coordinator:	Hugo Ayala Solares

Institutions in Mexico

1. Benemérita Universidad Autónoma de Puebla (BUAP)
2. Centro de Investigación y de Estudios Avanzados (CINVESTAV)
3. Instituto Nacional de Astrofísica Óptica y Electrónica (INAOE)
4. Centro de Investigacion en Computacion, Instituto Politecnico Nacional (CIC-IPN)
5. Universidad de Guadalajara
6. Universidad Autónoma de Chiapas
7. Universidad Autónoma del Estado de Hidalgo
8. Instituto de Astronomía, Universidad Nacional Autónoma de México (IA-UNAM)
9. Instituto de Ciencias Nucleares, Universidad Nacional Autónoma de México (ICN-UNA
10. Instituto de Física, Universidad Nacional Autónoma de México (IF-UNAM)
11. Instituto de Geofísica, Universidad Nacional Autónoma de México (IGeof-UNAM)
12. Universidad Michoacana de San Nicolás de Hidalgo (UMSNH)
13. Universidad Politecnica de Pachuca

hawc-observatory.org

Institutions in the United States

14. California University of Pennsylvania
15. George Mason University
16. Georgia Institute of Technology
17. Los Alamos National Laboratory
18. Michigan State University
19. Michigan Technological University
20. NASA/Goddard Space Flight Center
21. NASA Marshall Space Flight Center
22. Pennsylvania State University
23. Stanford University
24. University of California, Irvine
25. University of Maryland
26. University of New Hampshire
27. University of New Mexico
28. University of Rochester
29. University of Utah
30. University of Wisconsin-Madison

We have a Charter, MoUs, publication rules, management structure, WBSs etc.

HAWC
High Altitude Water Cherenkov
Gamma-Ray Observatory

Quick Links:

Conacyt Thematic Networks

- La Red HAWC

News

- New Papers from HAWC
- Conference Proceedings
- Latest News
- Like Share
- Follow @HAWC_Obs

TeV Astronomy

- Catalog of TeV Sources
- TeV Review Papers

Institutions in Europe

31. Erlangen Centre for Astroparticle Physics, Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany
32. IFJ-PAN, Krakow, Poland
33. National Institute for Nuclear Physics, Padova Division, Italy
34. Max-Planck-Institut für Kernphysik, Heidelberg, Germany

Institutions in South America

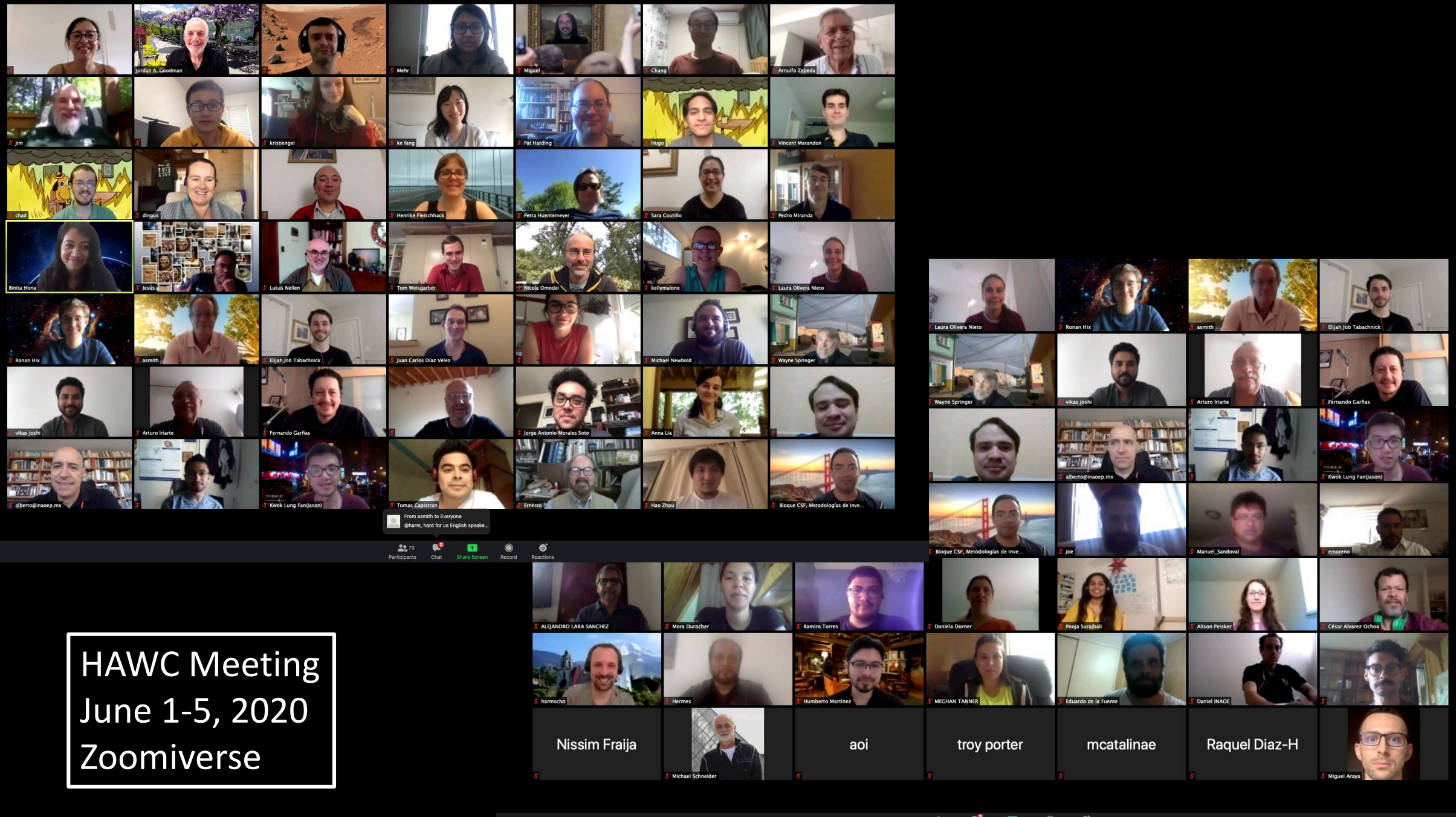
35. São Carlos Institute of Physics, University of São Paulo, Brazil

Institutions in Asia

36. Tsung-Dao Lee Institute & School of Physics and Astronomy, Shanghai Jiao Tong University
37. University of Seoul, South Korea

And before the pandemic we met about twice annually in person for example …

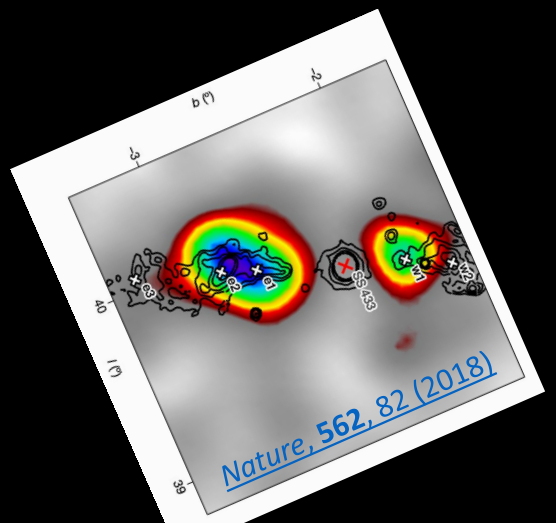

HAWC
High Altitude Water Cherenkov
Gamma-Ray Observatory
HAWC Meeting
September 23–25, 2013
Michigan Technological University
Houghton, Michigan

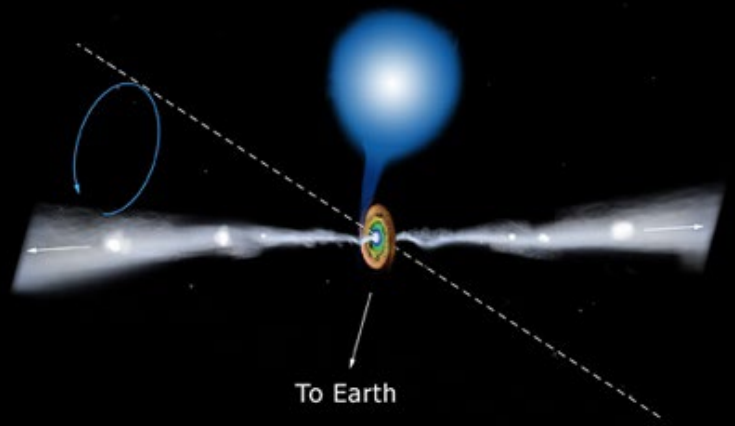


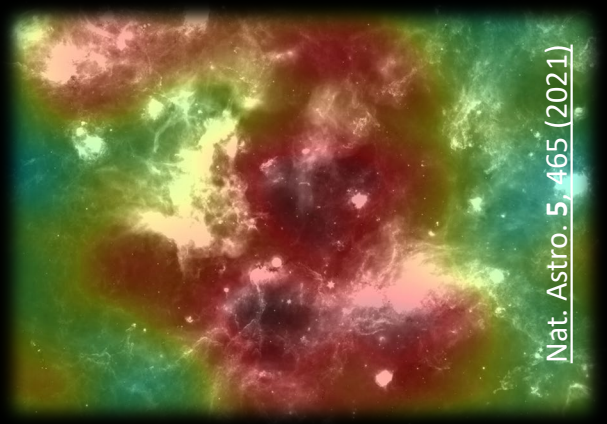
HAWC Meeting
June 1-5, 2020
Zoomiverse

Scientific Publications

- Since 2015 HAWC has pubished >55 papers in refereed journals
- Among these are publications in ***Science*** (2017, I.F.: 47.73), ***Nature*** (2018, I.F.: 49.96), and ***Nature Astronomy*** (2020, I.F.: 14.44)
- The ***corresponding authors*** of all of the high-impact publications included ***current and former members of the HAWC group at Michigan Tech***

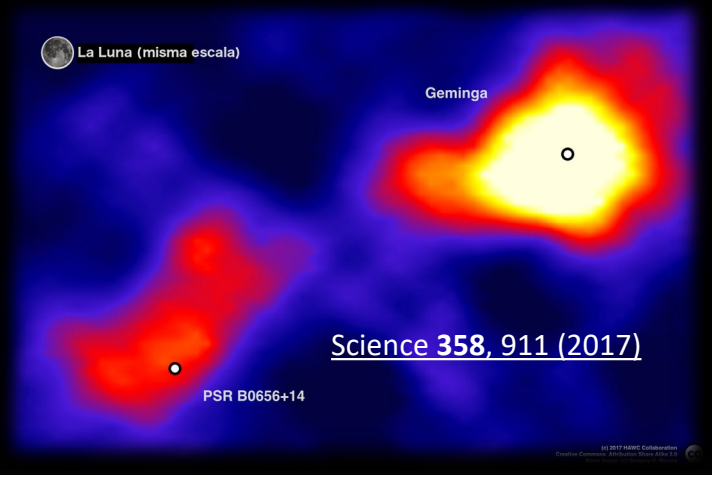






Press Coverage - A Random Selection

- One of these high-impact publications (corresponding author Hao Zhou, MTU ’15) got some press coverage



Science **358**, 911 (2017)

Quantamagazine Physics Mathematics Biology Computer Science Topics Archive

Gamma rays, on the other hand, stick to a straight path. With this in mind, researchers working with the High-Altitude Water Cherenkov Gamma-Ray Observatory (HAWC) in Mexico have recently made detailed studies of two relatively bright and relatively nearby pulsars, Geminga and Monogem. They examined not just the gamma rays

SPIEGEL Wissenschaft

Petra Hüntemeyer von der Michigan Technological University kommt zum Fazit: "Unsere Analysen sprechen dagegen, dass die beiden Pulsare für den Positronenüberschuss verantwortlich sind, den die Instrumente im Weltraum gemessen haben." Denn mit dem HAWC-Observatorium konnte auch die Umgebung der Pulsare abgelichtet werden

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HOME LATEST TECH REVIEWS HOW TO SCIENCE SPACEFLIGHT EARTHER IO9 EN ESPAÑOL

Mysterious New Results Can't Explain Why So Antimatter Hits Earth

By Ryan F. Mandelbaum | 11/16/17 2:00PM | Comments (26)

New observations of nearby pulsars—lighthouse-like neutron stars beaming energy—seem to have deepened a mystery that’s been bugging scientists for around a decade. The Earth is being hit with too much antimatter from outer space, and no one is sure why.

NATIONAL GEOGRAPHIC | PLANET POSSIBLE LOGIN

These 300 water tanks make up the High Altitude Water Cherenkov Gamma-Ray Observatory in Mexico, which helped astronomers study the source of antimatter particles hitting Earth.
PHOTOGRAPH COURTESY JORDAN A. GOODMAN

Mysterious Particles Are Slamming Into Earth—But Why?

New observations stir up debate over an abundance of antimatter found

Newsweek

TECH & SCIENCE

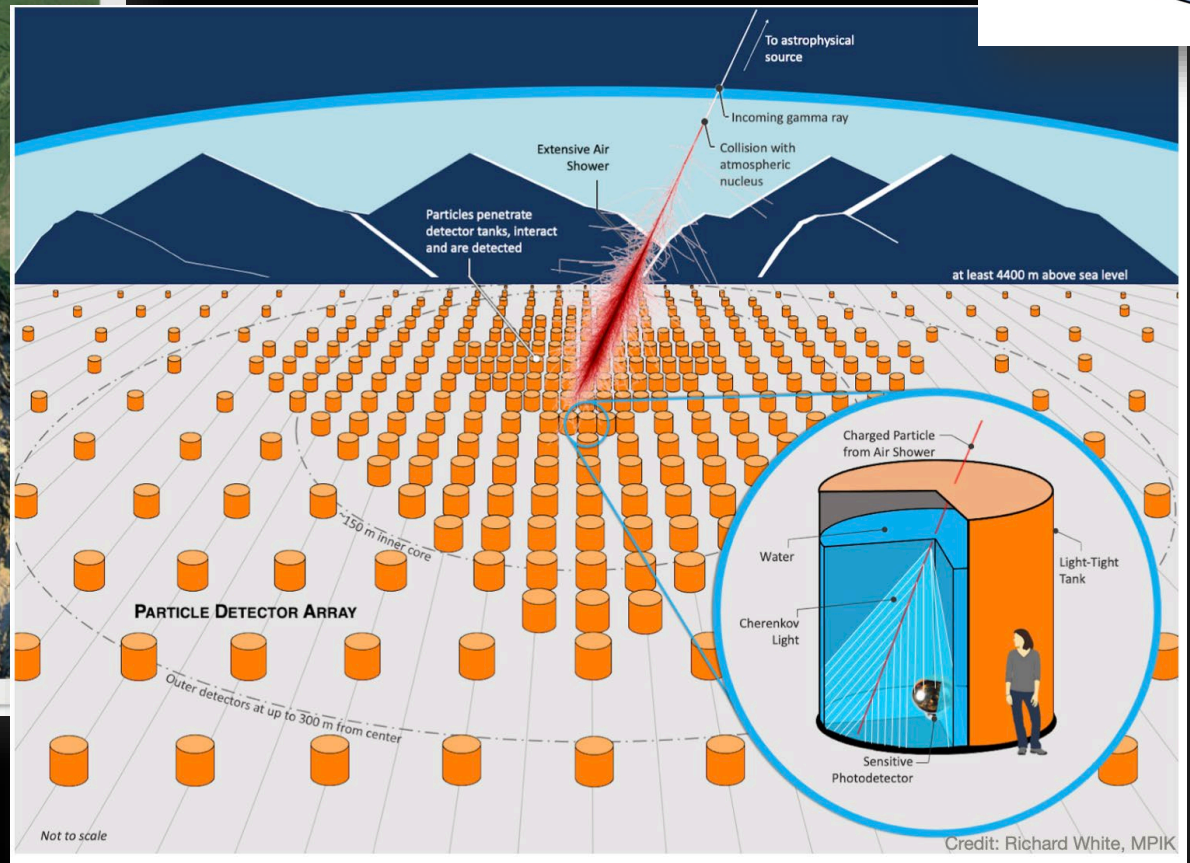
Mysterious Origins of Antimatter Continue to Baffle Scientists as Gamma Ray Observations Point to Dark Matter

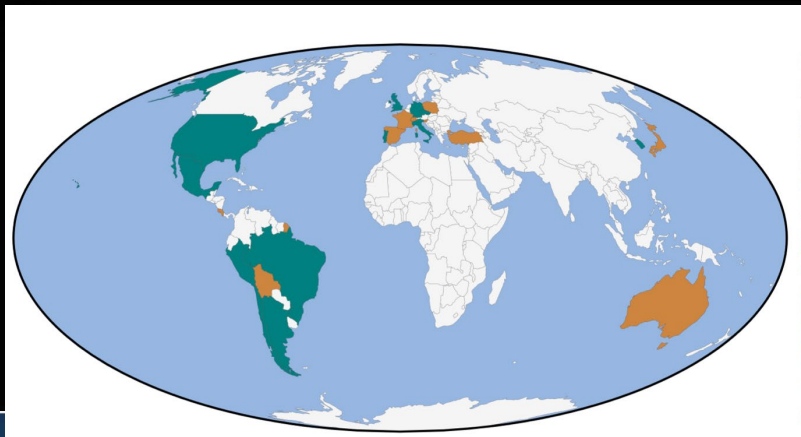
BY MEGHAN BARTELS ON 11/16/17 AT 2:00 PM EST

A giant array of water tanks, HAWC, lets scientists study gamma rays.
HAWC

The Future: Southern Wide Field Gamma-Ray Observatory

54 research institutions from 12 countries have signed an agreement for R&D on a gamma-ray observatory in the southern hemisphere. The aim of the collaboration is to develop a detailed proposal for the implementation of such an observatory, incl. site selection and technology choices.





Countries in SWGO

Institutes

Argentina*, Brazil, Chile, Czech Republic, Germany*, Italy, Mexico, Peru, Portugal, South Korea, United Kingdom, United States*

Supporting scientists

Australia, Bolivia, Costa Rica, France, Japan, Poland, Slovenia, Spain, Switzerland, Turkey

**also supporting scientists*

Spokespersons

Spokesperson: Jim Hinton

Vice-spokespersons: Petra Huentemeyer, Ulisses Barres

Steering Committee

Countries in which institutes have signed the "Statement of Interest" in SWGO are asked to appoint a national representative to sit on the SWGO Steering Committee. The current membership of the steering committee is:

- Adrian Rovero (Argentina)
- Ronald Shellard (Brazil)
- Claudio Dib (Chile)
- Jakub Vicha (Czech Republic)
- Christopher Van Eldik (Germany)
- Alessandro de Angelis (Italy, INFN)
- Marco Tavani (Italy, INAF)
- Andres Sandoval (Mexico)
- Jose Bellido Caceres (Peru)
- Mário Pimenta (Portugal)
- Jason Lee (South Korea)
- Jon Lapington (UK)
- Pat Harding (USA)

The Spokesperson and Vice-spokespersons are ex-officio members of the steering committee.

swgo.org

SWGO

The Southern Wide-field Gamma-ray Observatory

Astro2020 APC White Paper

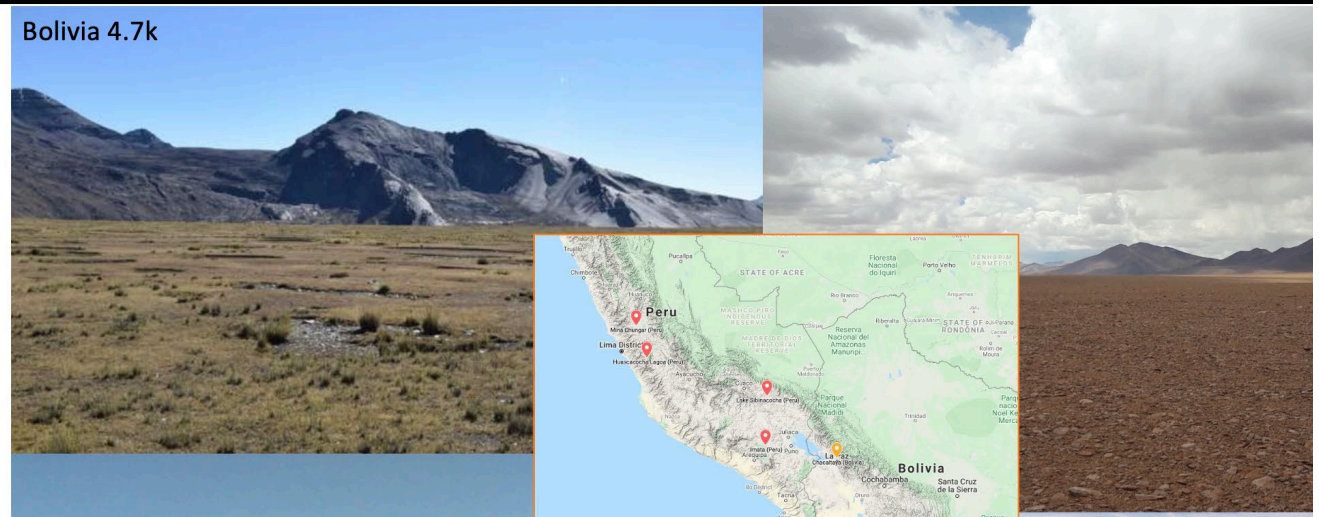
The Southern Wide-Field Gamma-Ray Observatory (SWGO): A Next-Generation Ground-Based Survey Instrument for VHE Gamma-Ray Astronomy

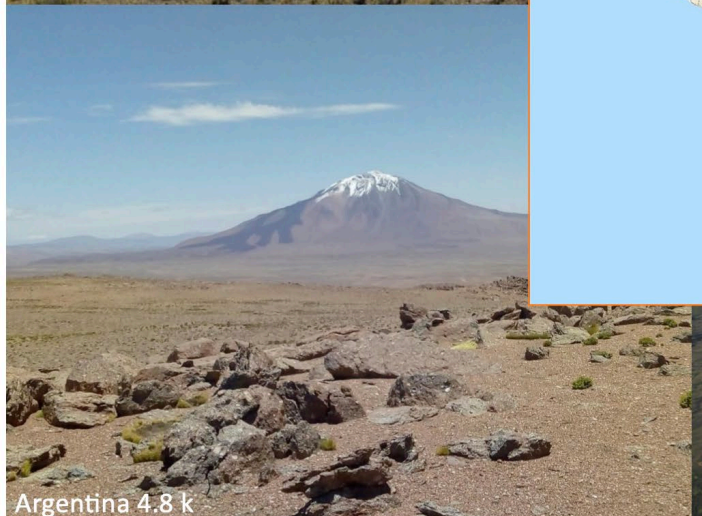
Project Category: Ground-Based – Medium

Thematic Areas: Particle Astrophysics & Gravitation; Multi-M
and Astrophysics; Cosmology and Fundamental Physics; Form

Abstract: We describe plans for the development of the Southern Wide-field Gamma-ray Observatory (SWGO), a next-generation instrument with sensitivity to the very-high-energy (VHE) band to be constructed in the Southern Hemisphere. SWGO will provide wide-field coverage of a large

Corresponding/Lead Author: Petra Huentemeyer (Michigan Technological University);
Contact: petra@mtu.edu; +1 (906) 487-1229
Co-authors/Proposing Team: P. Abreu[1 2], A. Albert[3], R. Alfaro[4], C. Alvarez[5], R. Arceo[5], P. Assis[1 2], F. Barao[1 6], J. Bazo[7], J. F. Beacom[8], J. Bellido[9], S. BenZvi[10], T. Bretz[11], C. Brisbois[12], A. M. Brown[13], F. Brun[14], M. Buscemi[15], K. S. Caballero-Mora[16], P. Camarri[17], A. Carramiñana[18], S. Casanova[19], A. Chi-

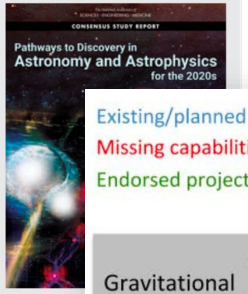




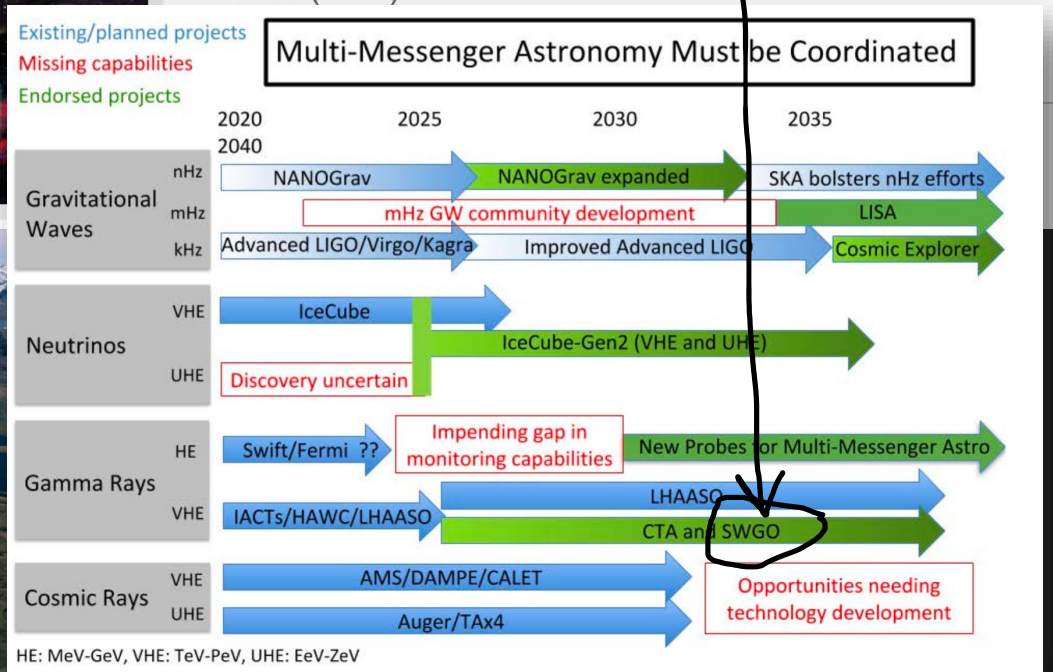
The National Academies of SCIENCES ENGINEERING MEDICINE — THE NATIONAL ACADEMIES PRESS

This PDF is available at http://nap.edu/26141 SHARE

Panel on Particle Astrophysics and Gravitation
Recommends funding SWGO at the level of ~$20M



Pathways to Discovery in Astronomy and Astrophysics for the 2020s (2021)



Mentoring Matters

HAWC Inauguration 2015 (left to right):
Jean Cottam-Allen (*Dep. Div. Director, PHY, NSF*), Denise Caldwell (*Div. Director, PHY, NSF*), Kirsten Tollefson (*Assoc. Dean, Graduate School, MSU*), Sabrina Casanova (Prof., Inst. of Nucl. Phys., Krabow, Nat. Polish Academy of Sciences), ***Brenda Dingus (APS/Los Alamos National Lab Fellow)***, Julie McEnery (APS Fellow, Sen. Project Scientist, NASA), Petra Huentemeyer, Magda González Sánchez (Prof., UNAM, Mexico City), Reshmi Mukherjee (*APS Fellow/Prof., Banard College*), France Córdova (*Director of NSF, 2014-2020*)

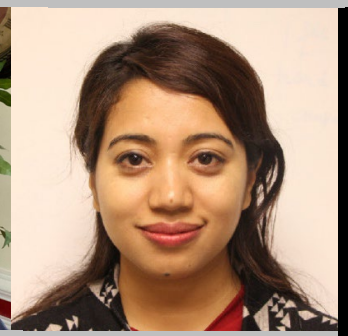
Michelle Hui (MTU PD 12-15)
Research Astrophysicist,
NASA Early Career
Achievement Medalist

Hao Zhou,
(MTU PhD '15)
T.D. Lee Fellow,
Shanghai University

Hugo Ayala Solares
(MTU PhD '17)
Research Assist.
Professor, Penn State

Henrike Fleischhack
(MTU PD 17-20)
PD, NASA/Catholic
University

Chad Brisbois
(PhD MTU '19)
Research Staff Member,
Inst. for Defense Analysis



Binita Hona
(MTU PhD '20)
PD, University of Utah

Xiaojie Wang,
PD since 2021

Dezhi Huang,
PhD candidate

Rishi Babu,
PhD candidate

Rhiannon Turner,
PhD candidate

Ian Herzog,
MS '22

Sonali Mohan,
MS '22

IX-B. PROVOST REPORT

Jacqueline Huntoon, Provost

Provost's Report

Board of Trustees
April 29, 2022

Jackie Huntoon

Michigan Tech

Tenure and Promotion Recommendations

8 Recommendations for promotions from

- Assistant Professor without Tenure to
- Associate Professor with Tenure

3 Recommendations for promotion from

- Associate Professor without Tenure to
- Associate Professor with Tenure

10 Recommendations for promotions from

- Associate Professor with Tenure to
- Full Professor with Tenure

Kudos to Faculty Considered for Tenure and/or Promotion

From The George Washington University:

"In sum, they have produced a significant and prolific body of research in the [research area] that demonstrates their ability to have a broad scholarly impact and develop implications for practice."

From Texas A&M University:

"a trend that is affecting the vast majority of [research area] around the globe, I think the they should continue to have great funding opportunities moving forward."

From UConn:

"...has positioned them as a leader within the [research area] research community."

Kudos Continued

From Johns Hopkins University:

"… lists numerous abstracts with student authors from underrepresented groups in science, which indicates that their laboratory is a productive environment for students to learn science."

From Wesleyan University:

"I find that [this faculty member] has worthily won a nationally and internationally recognized leading position in the field."

From Purdue University:

"…research has led to high quality publications in several of the top journals in the field."

Lecturer Promotions

2 Promotions from Lecturer to Senior Lecturer

- Maria Bergstrom – Department of Humanities
- Anthony Pinar – Dept. of Electrical & Computer Engineering

3 Promotions from Senior Lecturer to Principal Lecturer

- Christopher Cischke – Dept. of Electrical & Computer Eng.
- Brett Hamlin – Department of Engineering Fundamentals
- Elizabeth Meyer – Department of Visual & Performing Arts

Reviews for Reappointment

25 Major reviews

- Tenure-track faculty reviewed for reappointment.
- Recommendations forwarded for approval to the Board of Trustees.

53 Interim reviews

- Tenure-track faculty reviewed for continuing appointment.
- Board approval not required for continuing appointments.

65 Non-Tenure-Track instructional faculty reviews

- Lecturer-track faculty reviewed for reappointment or continuing appointment.
- Professors of Practice reviewed for continuing appointment.
- Board approval not required for reappointment or continuing appointment of instructional-track faculty.

NTT Proposed Changes

Working group

- Met throughout 2021-22 academic year.
- Recommended initial set of changes approved by the Senate 4/20/22 and by the administration 4/25/22.

Recommended changes

- Reference as ITF (who they are) vs. NTT (who they are not).
  - To be documented via changes to the Faculty Handbook (sections 1.5.1 & 1.5.5) & Board Policy (section 6.1).
- Change titles of lecturer-track faculty
  - *Lecturer to Assistant Teaching Professor*
  - *Senior Lecturer to Associate Teaching Professor*
  - *Principal Lecturer to Teaching Professor*

2021-22 Emerita/Emeritus Faculty

Dr. Victoria Bergvall – HU

Dr. Tomas Co – ChE

Dr. Jiann-Yang “Jim” Hwang – MSE

Dr. Faith Morrison – ChE

Dr. CK Shene – CS

Dr. Diane Shoos – HU

Dr. Patricia Sotirin – HU

Dr. Stanley Vitton – CEGE

2021-22 Curriculum Changes

4 New Degrees – 2 undergraduate & 2 graduate

6 New Undergraduate Minors

1 New Undergraduate Concentration

5 New Graduate Certificates

4 Name Changes

1 Graduate Program Shelved

University Professor Awarded Spring 2022

Jeffrey Naber

Henes Endowed Professor

Director, APSRC

Department of Mechanical Eng. – Eng. Mechanics

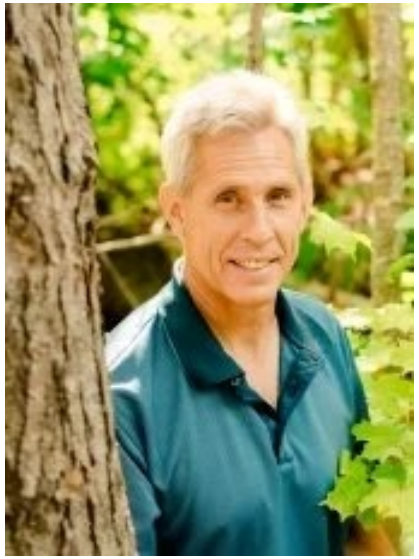
Michigan Tech

Distinguished Professors Awarded Spring 2022

Andrew Burton

Professor

CFRES



Petra Huentemeyer

Professor

Physics

Christopher Plummer

Professor

VPA

Michigan Tech

Distinguished & University Professors Awarded Spring 2021

Distinguished Professor

Jason Blough

Professor

ME-EM

University Professor

Robert Nemiroff

Professor

Physics

Michigan Tech

Thank You

IX-C. UNDERGRADUATE STUDENT GOVERNMENT

Cheyenne Scott, President

USG BOARD OF TRUSTEES PRESENTATION

Cheyenne Scott, USG President
Zachary Olson, USG Associate Member
April29, 2022

Michigan Technological University

2021-2022 In Review

- Spoke in support of Senate Proposal 2-22, on teaching evaluations
- USG Resolution 2021-2022 #001, on the scheduling of Exams, Projects, Papers, and Presentations on Election Day
- USG Resolution 2021-2022 #002, on Fall Break (October Recess)
- Proposed reform of the Registered Student Organization (RSO) catering “value menu” and the pre-approval of outside vendors to cater on-campus RSO events
- Worked with IRHC to facilitate town hall meeting between students/administration regarding dining hall concerns.

2021-2022 In Review (Cont'd)

- Represented MTU students at the United Student Government Conference, an annual statewide conference of the 14 public university student government associations

- Represented MTU students at One UP, annual conference between LSSU, MTU, and NMU SGAs

2022-2023 Executive Board

President: Cheyenne Scott

Major: Biomedical Engineering and Social Science, Fourth Year

Treasurer: Emily Ruf

Major: Mathematical Sciences, Second Year

Vice President: Kaitlyn Black

Major: Sustainability Science and Society, Fourth Year

Secretary: Isobel Bowker

Major: Mechanical Engineering, Second Year

Fall 2022 USG Goals

- Continue to improve relations with administration, faculty, and other student organizations.
- Improving of student accessibility to off campus housing and resources pertaining to renters' rights, local housing laws, and communications with landlords.
- Improving accessibility to resources for RSOs pertaining to funding, student involvement, and collaboration opportunities.
- Establishing regular communications with other Michigan university undergraduate student governments.

Thank You! Questions/Comments?

Cheyenne Scott
Undergraduate Student Government,
President

usg-president@mtu.edu
clscott@mtu.edu

(231) 203-4032

IX-D. GRADUTATE STUDENT GOVERNMENT

Nathan Ford, President and Ranit Karmakar, President-Elect

Advocacy • Enrichment • Community

Graduate Student Government

Nathan Ford and Ranit Karmakar

April 29, 2022
Board of Trustees
Michigan Technological University

Agenda

- End of Year Events
- Year in Review
- What's Next?

Merit Awards

Exceptional Staff Member
Cindy Wadaga

Exceptional Staff Member
Karen Bess

Exceptional Graduate Mentor
Dr. Zhanping You

Exceptional Student Leader
Lisa Eggart

Exceptional Student Scholar
Dongzhao Jin

GRC

- A grand total of 99 poster/oral presentations!
- Poster Winners
  - First - Arslan Amer
  - Second - Laura Schaerer & Brennan Vogl
  - Third - Mohanish Chandurkar
- Oral Winners
  - Four way tie!
  - Fatemeh Razaviamri
  - Rishi Babu
  - Isaac Wedig
  - Arslan Amer

Advocacy

250+ students attended 5 Town Halls and 26 Meet and Greets!

Health Info Sessions
Campus Master Plan
#gradlifehack
Accessibility Committee

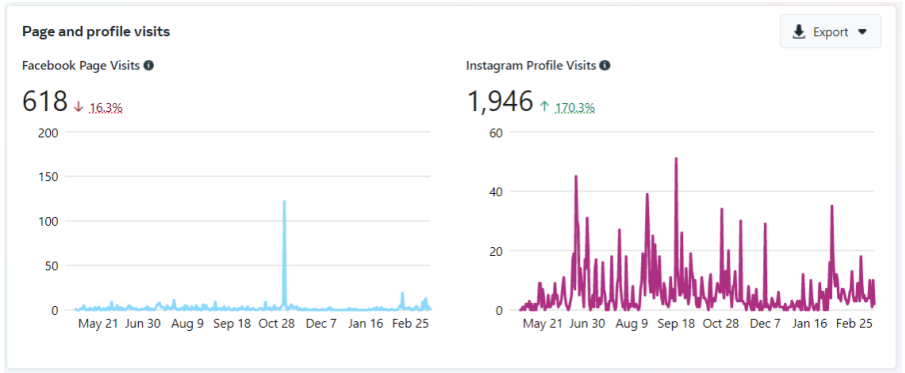
Enrichment

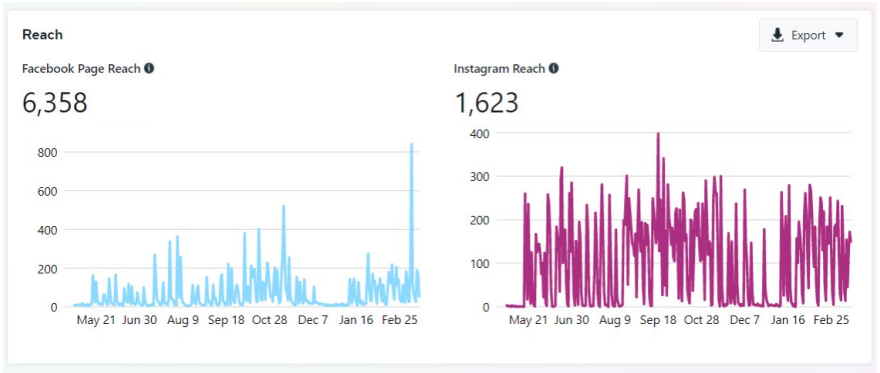
261 students attended 11 seminars!
Students gave 151 research presentations!

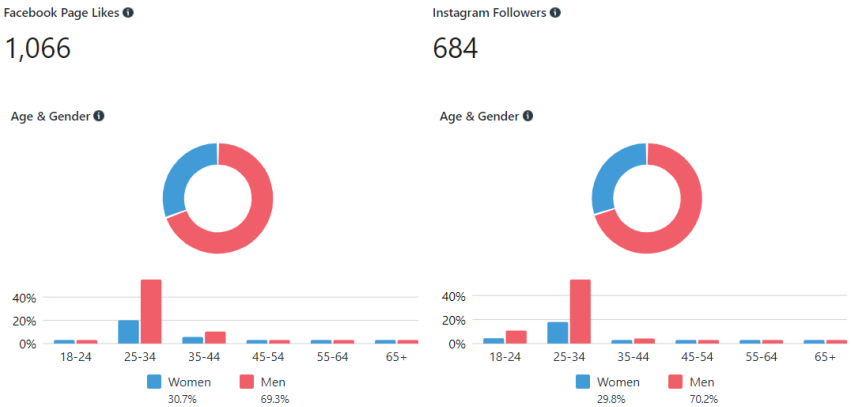
Community

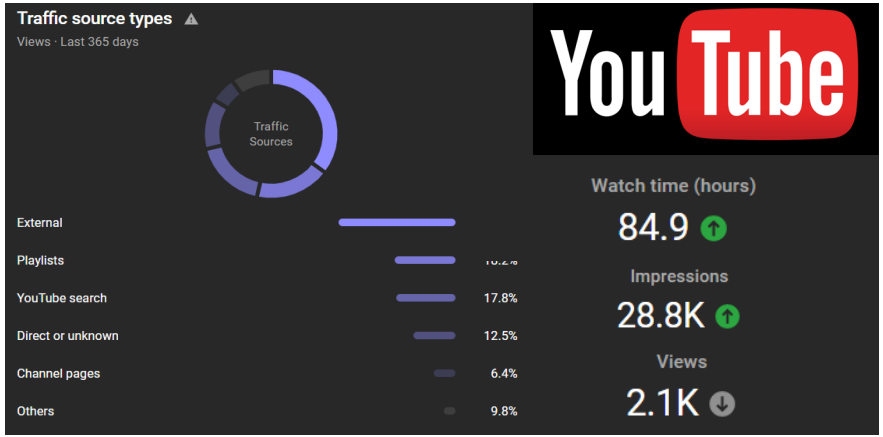
1,150 students attended 11 social events!

Social Media Outreach









Travel and Career Enrichment Grants

$22,500 in grants distributed to 106 students!

Travel Grant Stats (as of 4/15/22)

- **Total Applications : 82 (PhD - 70, MS - 12)**
  - **Presenting - 66 (PhD - 59, MS - 7)**
  - **Attending - 16 (PhD - 11, MS - 5)**

Career Enrichment Grant Stats

- **Total Applications : 24 (PhD - 11, MS - 13)**

Year in Review

1900 students reached!

$30k disbursed!

All of this accomplished by only 37 students.

2022-23 Team

President
Ranit Karmakar
(PhD, ECE)

Vice- President
Lisa Eggart
(PhD, Physics)

Secretary
Jacob Knott
(MS, ME-EM)

Treasurer
Karlee Westrem
(PhD, Math)

Research Chair
Michael Mauer
(PhD, ECE)

Prof. Dev. Chair
Bayle Golden
(MEM, Business)

Social Chair
Roya Bagheri
(PhD, ME-EM)

Pub. Relations Chair
Laura Vidal Chiesa
(PhD, Humanities)

Looking Ahead

ADVOCACY

- **GSG Travel Grants**
- **Student physical and mental health**
- **Transportation** *(Shuttles and rental cars)*
- **Graduate Student Stipend**
- **Student academic support and success**

ENRICHMENT

- **Research and professional development events**
- **Career opportunities**

COMMUNITY

- **Graduate Commons**
- **Summer Softball League**
- **Social events**

Advocacy • Enrichment • Community

Thank You

IX-E UNIVERSITY SENATE

Samuel Sweitz, President

University Senate Update

Sam Sweitz, Senate President

The 2021- 2022 Senate Term

51 Numbered Proposals/Resolutions/Charters

- Tied for 4th highest number of proposals in a Senate term (since 1959)
- 4/5 highest totals in last 4 years (20-21: 87; 19-20: 68; 18-19: 53; 03-04: 51)
- Average for the 29 previous years (1989-90 to 2017-18) is 27 proposals
- In the 1980s never more than 10 in a year

New Programs and Curricular Changes

- 2 new Bachelor's degrees
  - Manufacturing Engineering (MMET) and Sustainable Communities (SS)
- 6 new minors
  - Business IT Solutions (CoB), Construction Management (CEGE & CoB), and Entrepreneurship, Technology, and Innovation (CoB); Jazz Studies, Sound, and Theatre Performance (VPA)
- 1 new concentration
  - Pre-pharmacy w/in the Chemistry BA Degree (CH)
- 2 Program Name Changes
  - "Bioinformatics" to "Computational Biology" (BL) and "Pharmaceutical Chemistry" to "Medicinal Chemistry" (CH)
- 2 new Master's degrees
  - Business Analytics (CoB) and Policy and Community Development (SS)
- 5 new Graduate Certificate programs
  - Automation and Controls in Mechatronic Systems (AC); Fluid Power in Mechatronic Systems (MMET); Industrial Robotics (AC); Public Policy (SS); Scientific Computing (MA)

Student Evaluations of Teaching

Proposal 2-22: Revisions to Procedure 504.1.1 Teaching Effectiveness Evaluations

Proposal19-22: Uses of Student Evaluations of Instruction: Best-Practice and Minimal Standards

Policy and Procedure Revisions

- Proposal 15-22: Proposed change to Senate Policy 706.1.1 section 8 on timing of sabbatical applications
- Proposal 20-22: Proposed College-level Tenure and Promotion Review Process
- Proposal 27-22: Proposal to Modify Senate Policy 413.1: Accelerated Master's Programs
- Proposal 31-22: Establishment of an Accessible & Affordable Course Materials University Standing Committee

Policy and Procedure Revisions cont.

- Proposal 38-22: Proposed Revisions to Academic Rank Definitions Section of the Faculty Handbook and Associated Proposed Revisions to Board of Trustees Policy
- Proposal 43-22: Revision of Misconduct Policy in Research, Scholarly, and Creative Endeavors
- Proposal 48-22: Revisions to the Academic Integrity Policy

Calendar Changes

- Proposal 14-22: Proposal on the Scheduling of Examinations, Projects, Presentations, and Papers on Election Day
- Proposal 37-22: 2023-24 Academic Calendar and Provisional Calendar for 2024-25
- Proposal 39-22: Amending the Scheduling of Spring Break in Senate Policy 101.1
- Proposal 50-22: Proposal to Create an “October Recess”

Senate Constituency

- Proposal 1-22: University Senate Handbook
- Proposal 9-22: Resolution to Raise Awareness and Reduce Mental Health Stigma
- Proposal 23-22: Proposal for the Creation of an Ad-Hoc Committee to Evaluate the Structure and Timing of Senate Meetings
- Proposal 40-22: Improved Access to Health and Wellness Programs/Activities
- Proposal 41-22: Amendments to the University Senate Constitution
- Proposal 42-22: Amendments to the University Senate Bylaws

X. INFORMATIONAL ITEMS

A. Analysis of Investments

B. Research & Sponsored Programs

C. Advancement and Alumni Relations

D. Media Coverage

E. Employee Safety Statistics

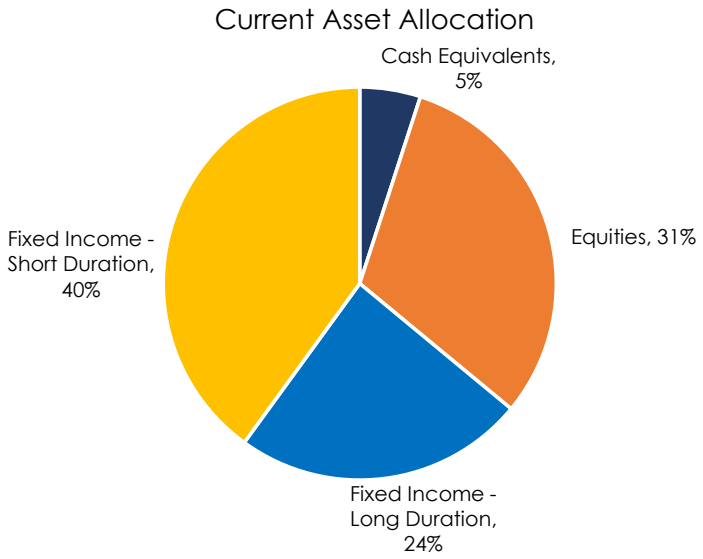
F. Disposal of Surplus Property Report

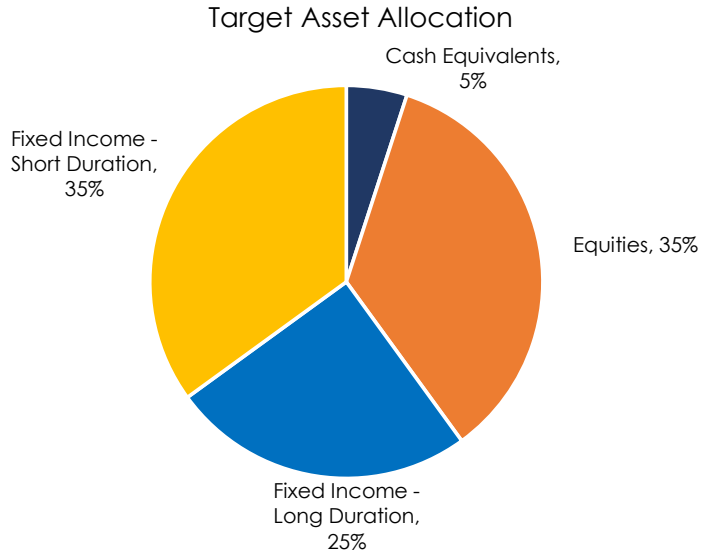
G. Summary of Scholarships, Awards, and Grants - Board Policy 9.3

X-A. ANALYSIS OF INVESTMENTS

MICHIGAN TECH UNIVERSITY
INVESTMENT PORTFOLIO
JUNE 30, 2021 THROUGH FEBRUARY 28, 2022

	Market Value 6/30/2021	Market Value 02/28/2022	Fiscal-Year Investment Return	Benchmark Return	Benchmark
Money Market Fund	$ 2,227,371	$ 2,335,917	0.00%	*0.04%*	*ICE BofA Merrill Lynch US T-Bill Index*
Equity Funds:					
Core Equity Fund	11,505,342	8,763,220	2.44%	*2.72%*	*S&P 500*
Commonfund Strategic Solutions Equity Fund	6,888,970	6,527,325	2.75%	*2.72%*	*S&P 500*
Total Equity Funds	18,394,312	15,290,545			
Fixed Income Funds:					
Intermediate Term Fund	8,896,448	10,208,953	-1.61%	*-1.50%*	*ICE BofA Merrill Lynch 1-3 Yr Treasury*
Commonfund Contingent Asset Portfolio	8,892,319	10,252,440	-1.00%	*-1.50%*	*ICE BofA Merrill Lynch 1-3 Yr Treasury*
High Quality Bond Fund	6,760,565	5,940,979	-3.36%	*-3.19%*	*Bloomberg Barclays US Aggregate Bond Index*
Multi-Strategy Bond Fund	-	5,947,166	-3.00%	*-3.21%*	*Bloomberg Barclays US Aggregate Bond Index*
Total Fixed Income Funds	24,549,332	32,349,538			
Total	$ 45,171,015	$ 49,976,000	0.23%		





X-B. RESEARCH AND SPONSORED PROGRAMS

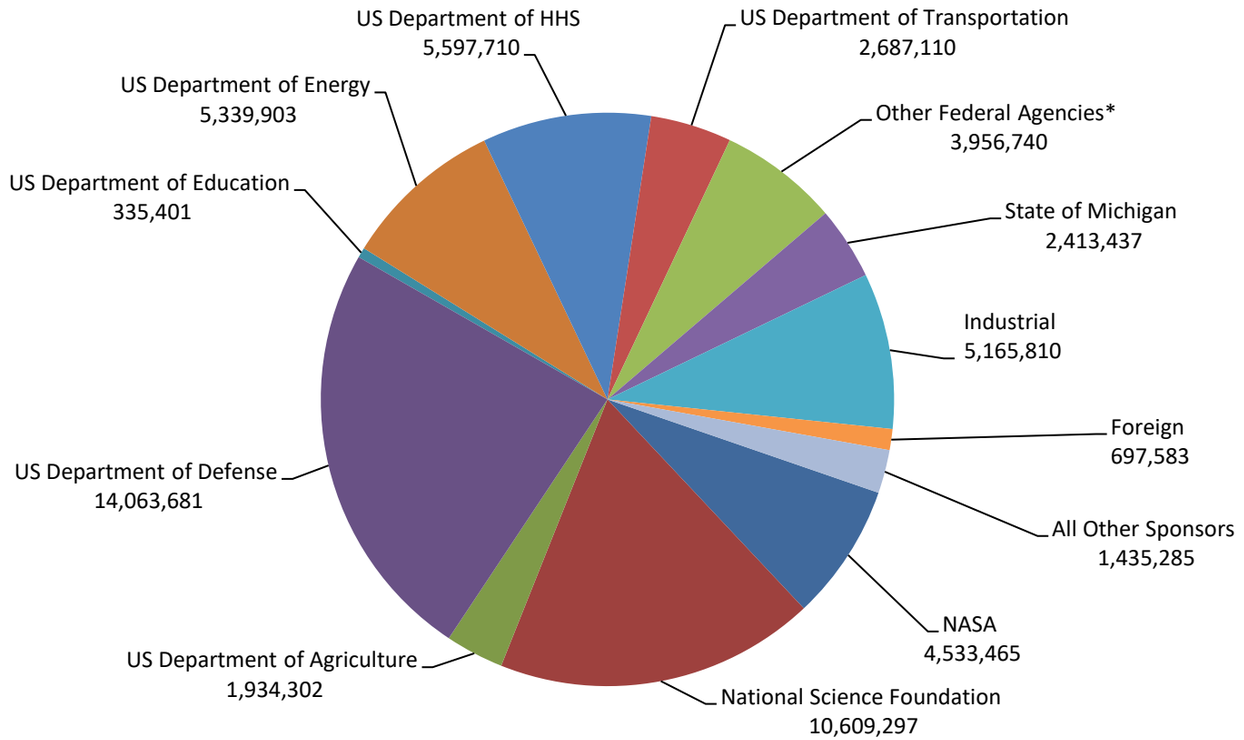
Sponsored Awards
Fiscal Year 2022
3rd Quarter
Ended Mar 31, 2022

TOTAL: $63,008,523

Pre-Proposals Submitted

(excluded from Proposals Submitted figures below)

FYTD 2021: 28
FYTD 2022: 22



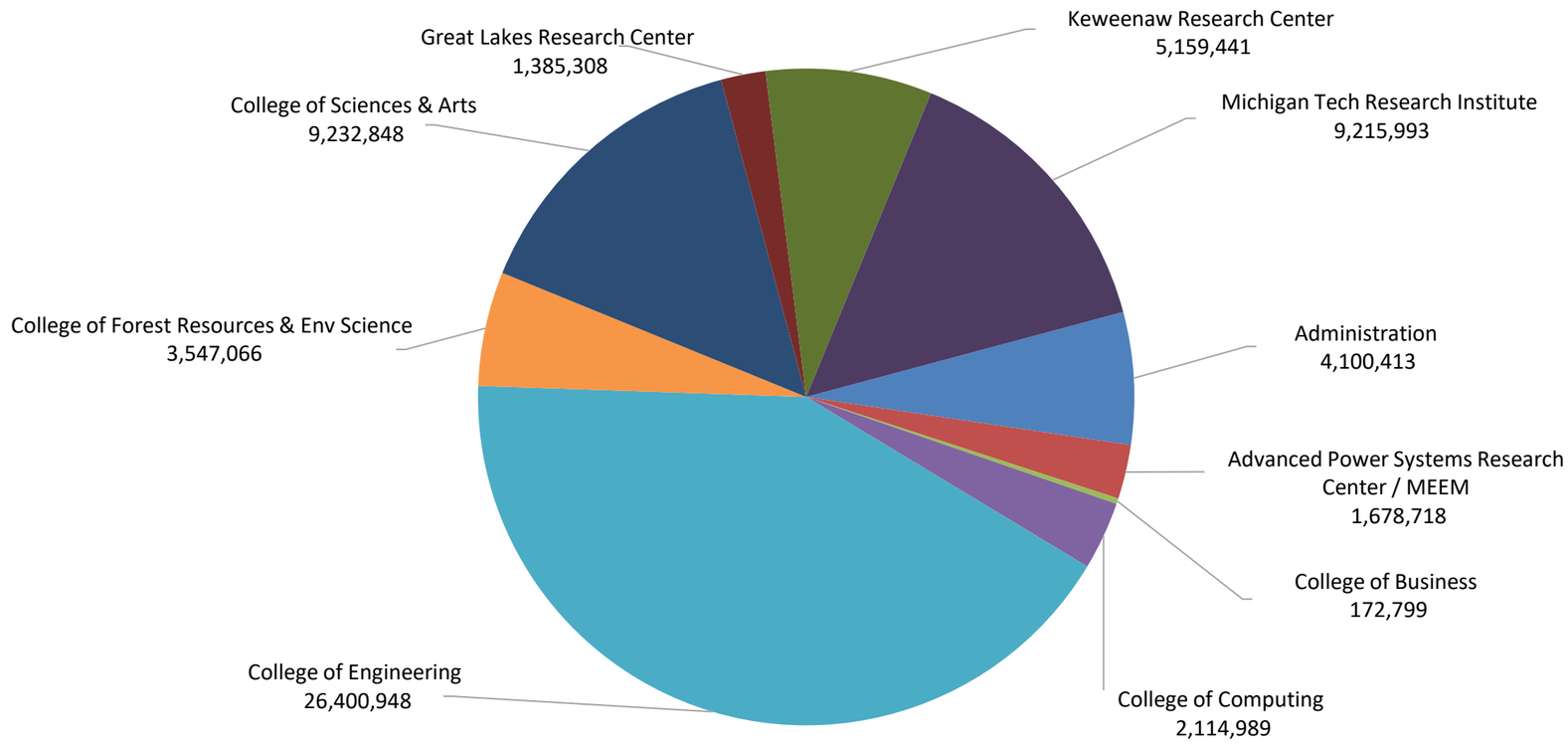
	Proposals Submitted		Awards Received		Awards Received ($)			
Sponsor	**FY '22 as of 3/31**	**FY '21 as of 3/31**	**FY '22 as of 3/31**	**FY '21 as of 3/31**	**FY '22 as of 3/31**	**FY '21 as of 3/31**	**Variance $**	**Variance %**
NASA	68	59	23	22	4,533,465	1,442,700	3,090,765	214.2%
National Science Foundation	114	97	43	37	10,609,297	7,315,738	3,293,559	45.0%
US Department of Agriculture	36	36	37	43	1,934,302	2,031,119	-96,817	-4.8%
US Department of Defense	79	82	69	75	14,063,681	13,751,767	311,914	2.3%
US Department of Education	4	1	4	1	335,401	7,670	327,731	4272.9%
US Department of Energy	35	42	24	35	5,339,903	4,909,294	430,609	8.8%
US Department of HHS	46	41	7	5	5,597,710	958,847	4,638,863	483.8%
US Department of Transportation	10	10	12	5	2,687,110	882,231	1,804,879	204.6%
Other Federal Agencies*	40	45	37	28	3,956,740	2,382,690	1,574,050	66.1%
Federal Agency Total	432	413	256	251	49,057,609	33,682,056	15,375,553	45.6%
State of Michigan	39	49	24	33	2,413,437	3,679,342	-1,265,905	-34.4%
Industrial	120	140	115	126	5,165,810	5,111,868	53,942	1.1%
Foreign	8	18	7	13	697,583	640,846	56,737	8.9%
All Other Sponsors	53	68	34	24	1,435,285	601,112	834,173	138.8%
Subtotal	652	688	436	447	58,769,724	43,715,224	15,054,500	34.4%
Gifts**	N/A	N/A	196	183	4,024,476	2,307,206	1,717,270	74.4%
Crowdfunding	N/A	N/A	7	8	214,323	9,261	205,062	2214.3%
Grand Total	**652**	**688**	**639**	**638**	**63,008,523**	**46,031,691**	**$16,976,832**	36.9%

Federal award dollars do NOT include $19,356,604 CRRSAA HEERF II [Covid Relief) from US Department of Education; received in last two quarters of FY21.
* US Dept of Commerce, US Environmental Protection Agency, US Dept of the Interior, National Endowments for the Arts & Humanities, US Dept of Homeland Security, US Dept of Justice, US Dept of Housing & Urban Development, US Dept of Labor, US Dept of State

**Gifts represent non-contractual funding from corporations, foundations, associations and societies in support of academic programs, scholarships/fellowships, student design & enterprise, research, youth programs and special programs.

Vice President for Research
Fiscal Year 2022
3rd Quarter
Ended Mar 31, 2022

TOTAL: $63,008,523



Percentages of Tenured & Tenure Track Faculty (as either PI or Co-PI)

Submitting Proposals since 07/01/2021
58.7%

On Active Projects as of 3/31/2022
61.9%

SPO & OIC Metrics[1]	Administration	Advanced Power Systems Research Center / MEEM	College of Business	College of Computing	College of Engineering	College of Forest Resources & Env Science	College of Sciences & Arts	Great Lakes Research Center	Keweenaw Research Center	Michigan Tech Research Institute	Pavlis Honors College	Totals	Fiscal Comparison	Percent Change
Proposals Submitted	20	16	1	43	310	74	81	23	35	49	N/A	652	688	-5.2%
Awards Received	125	6	8	24	247	70	46	23	33	57	N/A	639	638	0.2%
Federal	237,466	1,522,361	50,000	1,826,938	10,768,161	2,367,684	7,959,593	696,859	2,988,612	1,382,615	-	**29,800,289**	24,893,172	19.7%
Federal Pass-Through	1,188,404	20,000	-	165,377	9,082,326	305,568	423,569	500,990	-	7,571,086	-	**19,257,320**	8,788,884	119.1%
Foreign	-	-	-	-	55,655	-	616,099	-	25,829	-	-	**697,583**	640,846	8.9%
Gifts	2,095,492	-	38,140	102,000	1,604,939	84,259	79,646	-	20,000	-	-	**4,024,476**	2,307,206	74.4%
Crowdfunding	-	-	-	3,174	205,865	-	5,284	-	-	-	-	**214,323**	9,261	2214.3%
Industry	-	86,357	-	17,500	2,152,558	537,003	17,500	-	2,117,600	237,292	-	**5,165,810**	5,111,868	1.1%
Other	27,493	-	84,659	-	1,029,940	68,400	131,157	61,236	7,400	25,000	-	**1,435,285**	601,112	138.8%
State of MI	551,558	50,000	-	-	1,501,504	184,152	-	126,223	-	-	-	**2,413,437**	3,679,342	-34.4%
Total $ by Division	**4,100,413**	**1,678,718**	**172,799**	**2,114,989**	**26,400,948**	**3,547,066**	**9,232,848**	**1,385,308**	**5,159,441**	**9,215,993**	**N/A**	**63,008,523**	46,031,691	36.9%
Fiscal Comparison	2,076,934	N/A	13,000	1,611,709	15,102,535	4,501,338	5,787,704	1,230,440	7,801,008	7,414,676	492,347	46,031,691		
Percent Change	97.4%	N/A	1229.2%	31.2%	74.8%	-21.2%	59.5%	12.6%	-33.9%	24.3%	N/A	36.9%		
Disclosures Received[2]	-	-	-	-	59.92%	11.54%	14.12%	-	7.69%	6.73%	-	**26**	17	52.9%
Nondisclosure Agreements	5	3	-	-	30	2	2	-	12	13	-	**67**	64	4.7%
Patents Filed or Issued[2]	-	-	-	-	57.07%	-	33.36%	-	2.43%	7.14%	-	**14**	21	-33.3%
License Agreements	-	-	-	-	5	-	1	-	-	-	-	**6**	9	-33.3%
Gross Royalties[2]	-	-	-	-	4.35%	-	13.04%	-	17.39%	65.22%	-	**69,444**	113,925	-39.0%

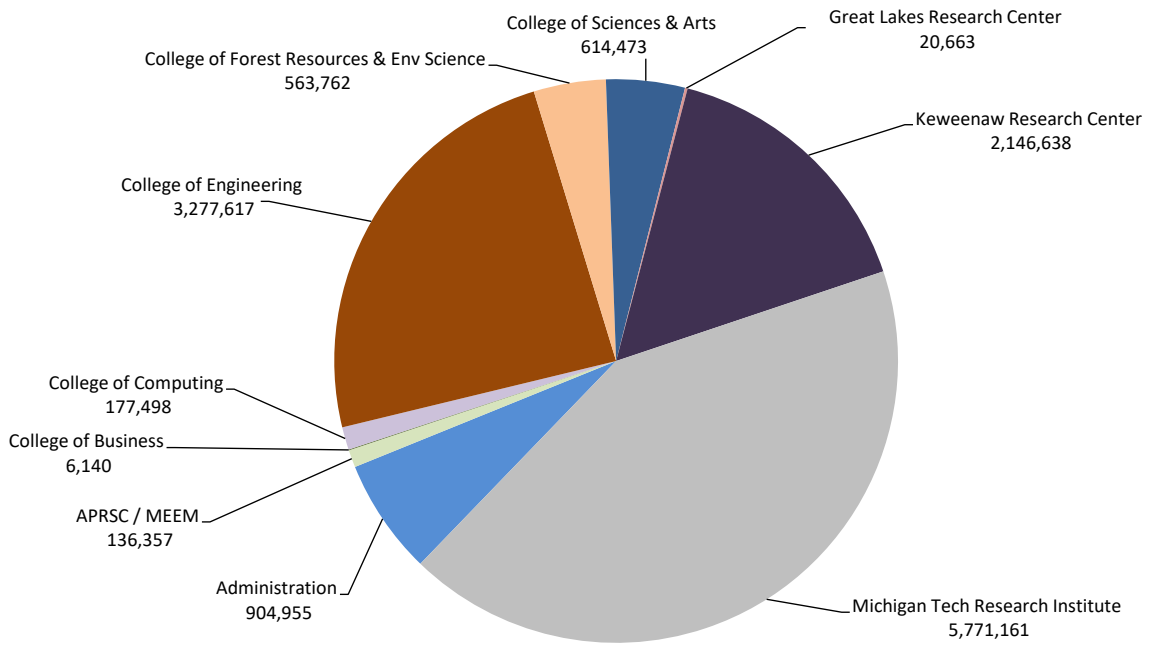
Federal award dollars do NOT include $19,356,604 CRRSAA HEERF II [Covid Relief] from US Department of Education; received in last two quarters of FY21.

[1] *Combined Metrics from both the Sponsored Programs Office (SPO) and Office of Innovation & Commercialization (OIC)*

[2] *Percentages reflect the proportional contribution from each Division (calculated by dividing the sum of the fractional contributions of all inventors for each unit by the total number of inventors).*

Sponsored Awards
-Industry-
COMBINED
Fiscal Year 2022
3rd Quarter
Ended Mar 31, 2022

TOTAL: $13,619,264



Sponsored Awards & Gifts	Administration	APRSC / MEEM	College of Business	College of Computing	College of Engineering	College of Forest Resources & Env Science	College of Sciences & Arts	Great Lakes Research Center	Keweenaw Research Center	Michigan Tech Research Institute	Pavlis Honors College	Totals	Fiscal Comparison	Percent Change
Automotive	186,400	64,342	640	-	872,698	-	-	-	2,023,601	197,331	-	**3,345,012**	2,987,160	12.0%
Business & Economics	4,225	-	2,000	-	18,000	-	-	-	-	-	-	**24,225**	17,000	42.5%
Chemical	38,000	-	-	-	193,000	-	-	-	-	-	-	**231,000**	316,864	-27.1%
Civil	35,762	-	-	-	81,250	-	-	-	-	-	-	**117,012**	346,540	-66.2%
Consumer Products	317,400	22,015	-	-	382,738	403,653	4,985	-	-	-	-	**1,130,791**	958,681	18.0%
Defense & Space	49,998	-	-	67,500	708,184	-	-	-	59,662	5,403,905	-	**6,289,249**	3,957,944	58.9%
Energy	27,500	-	3,000	-	275,531	-	-	-	-	-	-	**306,031**	1,131,242	-72.9%
Environmental	26,079	-	-	-	20,685	-	-	12,663	-	39,961	-	**99,388**	29,494	237.0%
Health	31,666	-	-	-	187,937	-	591,988	-	63,375	-	-	**874,966**	167,851	421.3%
Industrial Engineering	6,000	-	-	-	83,087	-	-	-	-	-	-	**89,087**	504,725	-82.3%
IT Services	4,000	-	-	60,000	30,110	-	-	-	-	-	-	**94,110**	178,478	-47.3%
Mining & Metals	26,500	-	-	-	296,051	133,350	-	-	-	-	-	**455,901**	479,311	-4.9%
Other	122,600	50,000	-	-	82,125	26,759	17,500	-	-	-	-	**298,984**	300,581	-0.5%
Technology	28,825	-	500	49,998	46,221	-	-	8,000	-	129,964	-	**263,508**	515,975	-48.9%
Total $ by Division	**904,955**	**136,357**	**6,140**	**177,498**	**3,277,617**	**563,762**	**614,473**	**20,663**	**2,146,638**	**5,771,161**	**N/A**	**13,619,264**	11,891,846	14.5%
Fiscal Comparison	440,694	N/A	13,000	542,272	3,500,937	1,172,117	309,561	-	2,346,326	3,398,339	168,600	11,891,846		
Percent Change	105.3%	N/A	-52.8%	-67.3%	-6.4%	-51.9%	98.5%	0.0%	-8.5%	69.8%	0.0%	14.5%		

Michigan Technological University
Total Research Expenditures by College/School/Division
Fiscal Year 2022 & 2021
As of March 31, 2022 and March 31, 2021

College/School/Division	FY2022	FY2021	Variance	%
Administration*	4,368,282	3,230,352	1,137,930	35.2%
Advanced Power Systems Research Center (APSRC)/ME-EM	780,990	N/A	780,990	N/A
College of Business	1,505,978	1,239,109	266,869	21.5%
College of Computing	3,837,691	3,171,313	666,378	21.0%
College of Engineering	22,973,282	22,609,380	363,902	1.6%
College of Forest Resources & Environmental Science	4,828,030	4,116,774	711,256	17.3%
College of Science & Arts	12,106,789	10,731,888	1,374,901	12.8%
Great Lakes Research Center (GLRC)**	1,000,834	904,127	96,707	10.7%
Pavlis Honors College	N/A	443,558	(443,558)	-100.0%
Keweenaw Research Center (KRC)	8,793,585	7,304,967	1,488,618	20.4%
Michigan Tech Research Institute (MTRI)	9,333,981	7,865,775	1,468,206	18.7%
Total	**69,529,442**	**61,617,243**	**7,912,199**	**12.8%**

*Includes the Vice Presidents, Provost, and others who report to a VP, Provost or the President. Except for the research institutes that report to the VPR.

**Includes GLRC department (non-academic researchers) expenditures only. All other GLRC center expenditures are shown in the researchers' respective colleges.

X-C. ADVANCEMENT AND ALUMNI RELATIONS

Advancement and Alumni Engagement
Michigan Tech Board of Trustees
April 29, 2022

2021-2022 Goals and Initiatives to be achieved in collaboration with administrative and academic leadership and the Michigan Tech Fund Board of Directors.

- Campaign prep (completion of the feasibility study, following through on recommendations)
    - Review the fee structure to be sure it's in accordance with our peers and appropriate for a campaign
    - Review of the MTF bylaws
    - Ensure Donor integrity and intention in every aspect of our business
    - Evaluate private assets as an investment vehicle for the endowment
    - Revitalize alumni engagement with services and programs virtually and across the nation
- Rebrand and refocus annual giving toward engaging more first time donors
- Implement Customer Relationship Management software
- Engage alumni, principal and major gift donors and corporate/foundation partners in a virtual and hybrid environment
- Launch Alumni DEIS Advisory Board for Fall and establish alumni board liaison

Highlights

- Raised over $42 million to date 103% of the $40.75 million goal (as of March 31)
- We have recently completed a campaign readiness study and are currently engaging in seeking qualified independent consulting firm to provide capital campaign counsel
- Contracted with Ellucian to integrate new CRM
- Contracted with RNL, a digital engagement and annual giving services company to increase giving and grow the donor pipeline.
- Secured $40,000 gift from General Motors to continue supporting the annual Ride the Waves program provided by the Center for Science & Environmental Outreach.
- Received commitment from 3M to support a $40,000 outreach event during Michigan Tech spring break, hosted by Minneapolis/St. Paul schools in partnership with Center for Educational Outreach.
- Coordinated collaboration between Advancement, Career Services, IPEC, and College of Forest Resources and Environmental Science in developing multilateral partnership between Michigan Tech, IKEA and Linnaeus University in Sweden. Pillars of collaboration include co-ops in Sweden (beginning this summer), an MOU for future research projects, and exploring gifts supporting Enterprise.
- Hosted several companies (including Milwaukee Tool, Nucor, Ariens) on tours of recent corporate-sponsored labs in EERC, prompting multiple requests for proposals due Spring 2022.
- Rekindled longstanding philanthropic partnership with Whirlpool in late 2020. Since then, $300,000 in research has been signed, recruiting has increased, and Whirlpool Foundation has reinvested in supporting Summer Youth Program scholarships.
- Four new recruiting scholarships through CEGE Pipeline Partnership (Fleis & Vandenbrink, Bacco & SME) through collaborative efforts with CFR, Career Services, and CEGE department.
- Four pending recruiting scholarships through Vector Partnerships (Plexus, ITC, Wolverine, and Consumers) through collaboration with ECE department and CFR.
- Continued growth of multi-million dollar Working Family Scholarship Program through support from The Thompson Foundation.
- The President's Hockey Skybox was well attended during the CCHA Mason Cup Tournament
- Hosted presidential alumni and friends events in Florida
- Hosted Dave House’s campus visit during the Innovators of Industry and Computing Showcase events, April 3-6

- H-STEM Groundbreaking will be held April 29, at 1:00 PM. Construction begins on May 2.
- The Alumni Engagement Office hosted several regional & local events, including Winter Carnival and the post-ceremony Commencement reception
- The new Alumni Board of Directors will begin their 6-year term July 1, 2022
- Plans are underway for Reunion Weekend 2022: August 4-6, 2022
- Provided data-driven analyses for Student Affairs/Dean of Students; with broad recommendations for steps going-forward (including a revitalized Parents giving program).
    - Provided a practical and comprehensive Principal and Presidential-level engagement program for donors with 7+ figure philanthropic capacity and/or significant private sectors influence as C-suite executives (125 individuals)
    - Utilized wealth-screening data combined with donor giving recency/frequency algorithm to identify top ~20 donors in 18 dominant domestic markets.

Please keep the family and friends of Darwin Moon in your thoughts and prayers. Darwin was a member of Michigan Tech's Alumni Board, the Recognition & Recruitment Committee and the ME-EM External Advisory Board. He was born to Leslie C. and Betty Lou Moon on May 28, 1957, in Ann Arbor, Michigan. After a brief battle with pancreatic cancer, passed away on March 16, 2022.

Recent Activity

- $55 million in pending asks from over 200 donors.
- Establishing principal gifts totaling $15 million to benefit endowed chairs, scholarships and program support in the Colleges of Business, Engineering, Sciences and Arts, and University priority discretionary funds.
- 197 of employees (14%) have contributed $190,664 to the Campus Campaign

Regional Areas of Focus Principal Giving/Presidential Outreach

- March 1 - Naples - Principal Giving event hosted by Mike '86 and Liz '88 Pulick.
- March 2 - Ft. Meyers - Seminar event hosted by President Koubek featuring Dr. Caryn Heldt - Chemical Engineering, Dr. Thomas Werner - Biological Sciences and Dr. Bill Sproule - retired Civil and Environmental Engineering and current hockey Historian
- March 3 - Venice - President's Society event hosted by Mike '75 and Carol Horan in Venice
- August 2022 - Traverse City/Petoskey

Advancement Services

- Ellucian Advance CRM conversion
    - Integration with Banner Finance, SAIS, HR & Financial Aid systems
    - Data clean up

Alumni Engagement

- We continue to increase the number of regional & local events we are hosting in person
    - Between Feb-March on campus and off campus events: 331 people engaged***(just counting pre-registrations, turnout often higher)*
        - February: 8 regional events (spanning AZ, MI, WI, MN), + 6 on campus during Winter Carnival
        - March hosted a regional event in SoCal for the first time in years, in addition to a virtual event, and hockey game watches (streaming and local) for MTU NCAA ice hockey tournament first round vs UMD

    - Highlights for upcoming events in April and May
        - April 15: Will be awarding Outstanding Young Alumni Award + Outstanding Future Alumni Award at Student Leadership Awards
        - April 21: will be hosting a virtual Global Campus Discovery Session for Alumni in partnership with David Lawrence, VP of Global Campus (targeting specific alumni for top 5 online post-grad degree and certificate programs) on Zoom
        - April 30: will host post-ceremony Commencement reception for all 1,050+ graduates and their families/friends/guests in the SDC

- We are increasing our communication efforts especially around social media and our e-newsletter
    - Have seen a 15% increase in Instagram followers on our alumni account due to this effort, and increase in engagement across all social accounts (activity around posts, registration for events directly affected, emails, comments, etc)
    - We continue to focus on strengthening our bi-monthly e-newsletter and adjust based on metrics (better open rates, click rates, etc). Eventually we hope to get this back to a monthly send.
- Plans are well underway for Reunion Weekend 2022: August 4-6, 2022. A full weekend of activities are on the docket to celebrate not only our honored classes (1962, 67, 72, 82, 92, 2002, 2012) but also large affinity reunions including: SYP 50th, Mascot 50th (will be inviting former suit wearers + supporters) and Men's Ice Hockey 100th
    - An outline of the schedule of events to be public soon (April on webpage)
    - Registration to open sometime in May
- The Alumni Board of Directors have gone through the nomination, interview, and selection process for a new "class" of Directors who will begin their 6-year term July 1, 2022, while a group of Directors close out their term at the end of the fiscal year on June 30.
    - The Alumni Board also suffered a loss of a current member: *Darwin Moon '79* who passed away March 16, 2022.
    - 7 members make up the "rolling off" class who served 2016-2022: *Emily McDonald '12, Daniel Batten '90, Matthew Barens '05, Andrew Burton '83, '97, Derek Chapel '05, Jenna Joestgen '10, Dennis Sage '86*
    - 9 Incoming Directors whose term will be 2022-2028: *Diane Cesarz, Tonya Moore-Bouchard, Donald Straughen, Stephen Williams, Christina Jufliak, Leanne Jensen, Michelle Wazny, Emma Zawisza, Katrina Black*
- The posting to hire an Assistant Director of Alumni Engagement, Community Programming (backfilling a position on the AE team that has been vacant since October) went up at the end of March.

Fundraising totals as of March 31, 2022

$9,285,487 in planned gifts
$4,002,272 in realized planned gifts
$5,747,125 in major outright gifts and pledges
$2,287,251 in annual gifts under $10,000
$1,923,101 in corporate support
$10,555,830 in foundation gifts

105 illustrations, proposals, and gift agreements were provided for donors
58 executed gift agreements

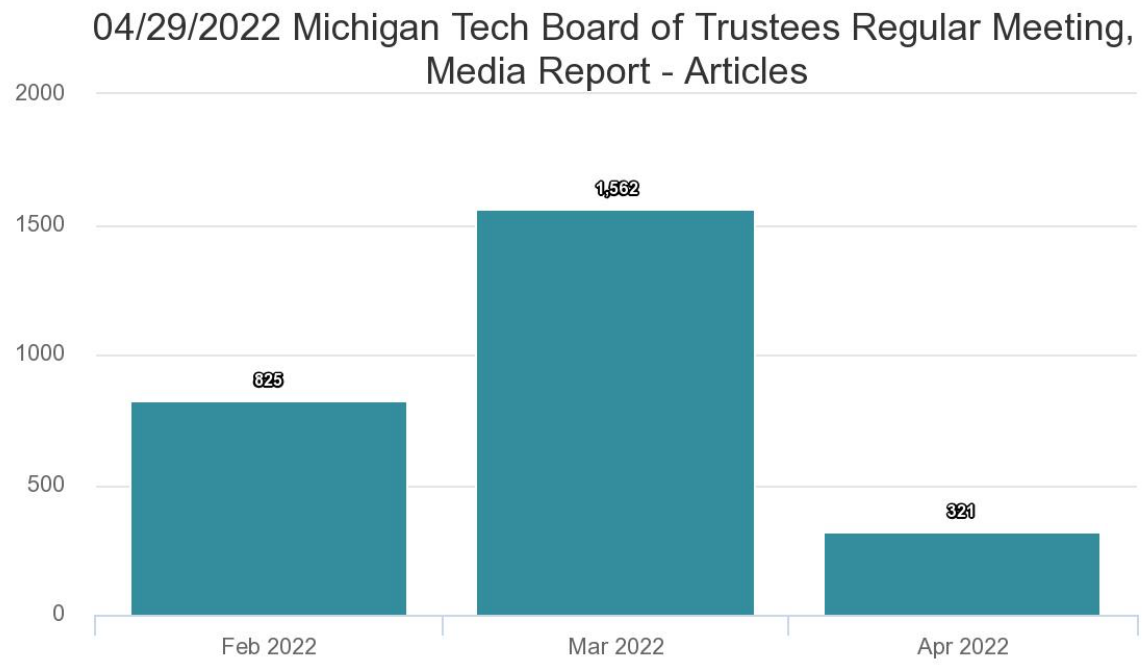
X-D. MEDIA COVERAGE

Media Report: Feb. 9 to April 14, 2022
Michigan Technological University
Regular Meeting of the Board of Trustees
Apr. 29, 2022

Overview

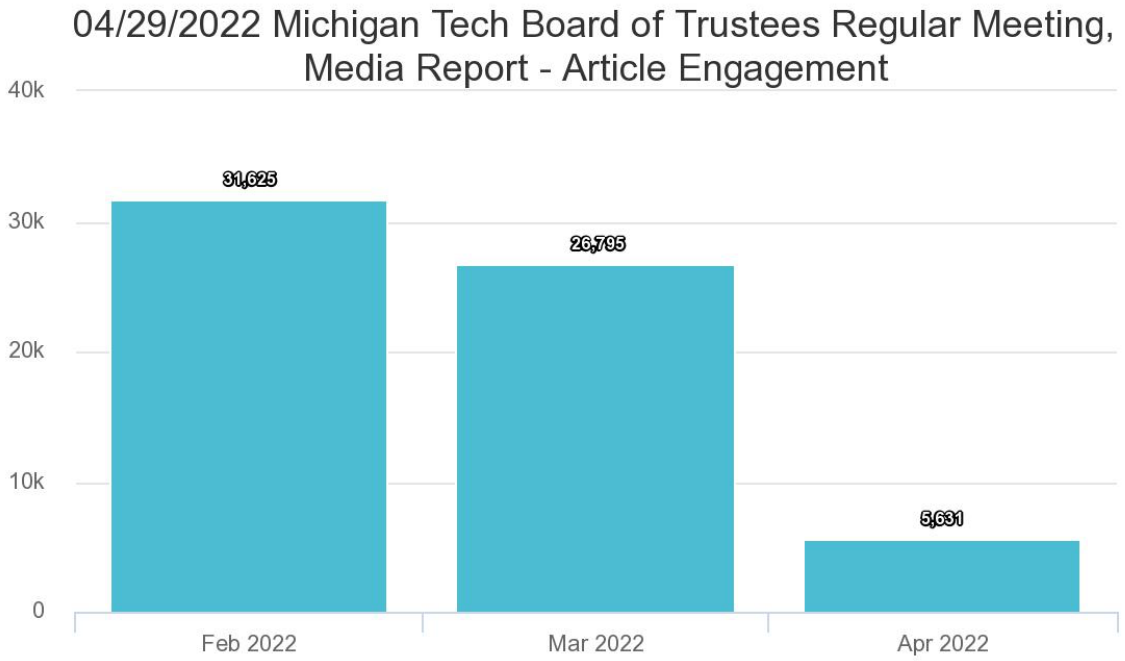
Articles	2,708
Total engagement	64,051
Average engagement	28
Journalist shares	518
Journalist reach	~ 16.19M
Average unique visitors per month (UVM)	~ 3.22M
Total UVM	~ 7.27B

Between Feb. 9 and Apr. 14, 2022, a total of 2,708 online articles mentioned Michigan Technological University:



MUCK RACK

Those 2,708 articles were shared, commented on, or liked on social media roughly 64,051 times, for an average engagement of 28 shares, comments, or likes per article:



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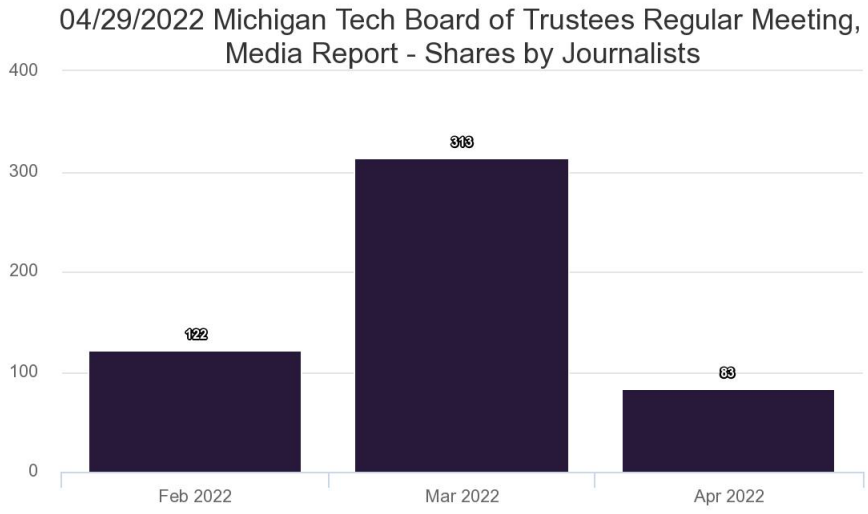
Journalists shared the articles on Twitter 518 times, resulting in a reach of roughly 16.19 million people:



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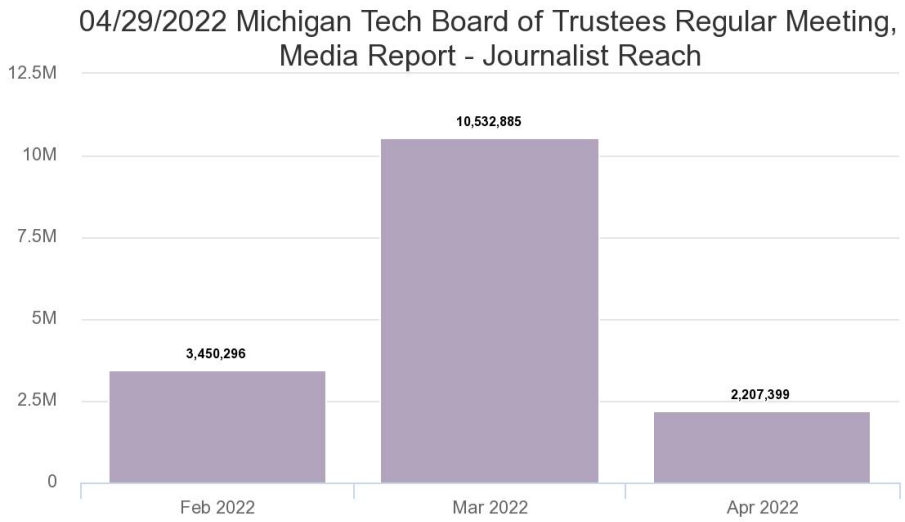

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News Highlights:

Research News
Jennifer Daryl Slack (HU) appeared as a guest on episode 47 of the **Darts and Letters** podcast, titled “Lost Utopias: A History of World’s Fairs.” She provided insight on the role of progress and convenience in the quest for utopia through technology. Slack also appeared on **NBC 26 Green Bay**’s Jan. 28 broadcast, where she discussed the role of algorithms in the production and consumption of news.

Trista Vick-Majors (BioSci) and her team were **interviewed by WLUC TV6** while conducting lake sampling on the Keweenaw Waterway as part of the Great Lakes Winter Grab, a collaborative effort of more than a dozen U.S. and Canadian institutions to collect samples during the winter.

Nancy Langston (SS) was interviewed by **MLive** about her recently published book, "Climate Ghosts: Migratory Species in the Anthropocene."

Roman Sidortsov (SS) was quoted in an article by **The New Statesman** reviewing options of businesses with “toxic” Russian assets amid the country’s invasion of Ukraine. Sidortsov was also interviewed by **The World**, speaking about the impact of Russian oil sanctions and boycotts of Russian products on global markets. He was also quoted in a **GBH News** story highlighting efforts from ethnic Russian academics to support and evacuate Ukrainian scholars.

General News
Jay Meldrum (KRC) was quoted by **The Washington Post** in a story on the electric future of snowmobiles.

Michigan Tech's mushing club was the subject of a feature story by **WJMN Local 3**. Club member Suzie Harris was quoted in the story.

Student-led rallies on MTU's campus in support of Ukraine were covered by the **Daily Mining Gazette**.

World Water Day celebrations and education led by Michigan Tech and the Keweenaw Bay Indian Community were featured by **WLUC TV6**. MTU sustainability science and society major Clare Fidler was quoted in the story.

Michigan Tech's Building Adults Skills In Computing (BASIC) program was the subject of a feature story on **WLUC TV6**. The program held its first in-person session in two years on Saturday (March 25). Chuck Wallace (CS), Kelly Steelman (CLS), and undergraduate Mitchell Eckstrand were quoted in the story.

WLUC TV6 ran a story on the sled hockey clinic held at the SDC. The clinic had more than 80 participants.

Dennis Livesay (CC/AC) and Tim Havens (CS/ICC/GLRC) discussed cutting-edge computer projects at Michigan Tech and the Computing[MTU] Showcase on the weekly **Copper Country Today** radio program.

Michigan Tech was identified by **Bridge Michigan** as one of only three Michigan universities where enrollment has increased over the past decade, alongside the University of Michigan and Michigan State University.

Amanda Stump (CC/ICC) was interviewed by **WLUC TV6** in the station's coverage of Michigan Tech's first Computing[MTU] Showcase. **ABC 10**, the **Daily Mining Gazette** and the **Keweenaw Report** also ran stories on the event.

X-E. EMPLOYEE SAFTETY STATISTICS

Michigan Technological University

EMPLOYEE SAFETY STATISTICS YEAR-TO-DATE

Jan - March 2021/2022

	Category	Years	Employee Classification							
			AFSCME	Faculty	Non-Exempt	POA	Professional	Temporary	UAW	Total
Number of Recordable Injuries	Injury Only w/Medical - No Lost Time	2021	1	0	0	0	1	0	0	**2**
		2022	0	0	0	0	0	0	0	**0**
	Lost Time Cases	2021	1	0	0	0	1	0	0	**2**
		2022	0	0	0	0	1	0	0	**1**
	Restricted Work Cases	2021	1	0	0	0	0	0	0	**1**
		2022	0	0	0	0	0	0	0	**0**
	Occupational Safety and Health Administration (OSHA) Recordable Injuries (Total of above)	2021	**3**	**0**	**0**	**0**	**2**	**0**	**0**	**5**
		2022	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
Number of Days	Injury Lost Time 3	2021	3	0	0	0	11	0	0	**14**
		2022	0	0	0	0	5	0	0	**5**
	Restricted Work Days 3	2021	30	0	0	0	0	0	0	**30**
		2022	0	0	0	0	0	0	0	**0**
Hours Worked	Total Work Hours	2021	60,329	210,840	22,169	3,989	260,173	13,690	38,832	**610,022**
		2022	58,716	210,168	22,197	4,103	260,883	12,917	34,941	**603,925**
	Percentage of Work Hours	2021	**9.9%**	**34.6%**	**3.6%**	**0.7%**	**42.6%**	**2.2%**	**6.4%**	**100.0%**
		2022	**9.7%**	**34.8%**	**3.7%**	**0.7%**	**43.2%**	**2.1%**	**5.8%**	**100.0%**
Rates	Lost Time Case Rate 1	2021	**3.3**	**0.0**	**0.0**	**0.0**	**0.8**	**0.0**	**0.0**	**0.7**
		2022	**0.0**	**0.0**	**0.0**	**0.0**	**0.8**	**0.0**	**0.0**	**0.3**
	Frequency Rate 2 (Recordable)	2021	**9.9**	**0.0**	**0.0**	**0.0**	**1.5**	**0.0**	**0.0**	**1.6**
		2022	**0.0**	**0.0**	**0.0**	**0.0**	**0.8**	**0.0**	**0.0**	**0.3**

OSHA has established specific calculations that enable the University to report the Recordable Injuries, Lost Time Case Rates and Frequency Rates. The Standard Base Rate (SBR) calculation is based on a rate of 200,000 labor hours which equates to 100 employees who work 40 hours per week for 50 weeks per year. Using the SBR allows the University to calculate their rate(s) per 100 employees.

1 The Lost Time Case Rate is calculated by multiplying the number of Lost Time Cases by 200,000 then dividing by the labor hours at the University.

2 The Frequency Rate is calculated by multiplying the number of recordable cases by 200,000 then dividing by the labor hours at the University.

3 The number of days are total days for the life of the cases first reported during this period.

The Bureau of Labor Statics 2020 reports, for Colleges and Universities over 1,000 employees; the average LOST TIME CASE RATE of days away from the average LOST TIME CASE RATE of days away from work was 0.5 and the average FREQUENCY RATE was 1.2.

X-F. DISPOSAL OF SURPLUS PROPERTY

Michigan Technological University
Surplus Property Sales
January 1, 2022 - March 31, 2022

Date	Description	Amount
01/21/22	Juniper SRX5400 Security Appliance	$ 3,000.00
01/21/22	One lot of equipment including: Mass Spectrometer, Thermo Fisher, Finnigan DeltaPlus XP Elemental Combustion System, Costech Model #4010 Continuous Flow Interface, Finnigan, Conflo III Gas Preparation System, Thermo-Finnigan, Gas Bench II Power Conditioner, PowerVar GPI Series	30,100.00
03/10/22	2012 Ford Escape Hybrid XLT	7,100.00
03/10/22	2010 Dodge Grand Caravan SXT	7,800.00
03/10/22	2011 Ford Escape Hybrid XLT	5,213.00
03/10/22	2016 Ford Escape SE	8,010.00
Total		**$ 61,223.00**

X-G. SUMMARY OF SCHOLARSHIPS, AWARDS, AND GRANTS

Board of Trustees Summary of Scholarships, Awards and Grants

2021-22 Fall and Spring

	*TOTAL 21-22 Fall/Spring	
	# Students Paid	**$ Total Paid**
INSTITUTIONAL		
GRANT[1]	2439	16,048,041
LOAN[2]	39	103,357
SCHOLARSHIP[3]	4610	35,078,656
**OTHER	144	1,375,142
TOTAL INSTITUTIONAL	**$52,605,197**	
SPONSORED		
SCHOLARSHIP	1022	2,828,570
TOTAL SPONSORED	**$2,828,570**	
FEDERAL		
***GRANT	7032	11,278,045
LOAN	2815	24,665,234
WORK-STUDY[4]	164	256,194
TOTAL FEDERAL	**$36,199,473**	
STATE		
GRANT	1194	3,463,367
SCHOLARSHIP	2	6,000
TOTAL STATE	**$3,469,367**	
EXTERNAL		
LOAN	843	12,774,433
SCHOLARSHIP	837	2,245,535
TOTAL EXTERNAL	**$15,019,968**	

TOTAL AID	**$110,122,576**

*Numbers include aid paid for fall 2021 and spring 2022. Summer semester awarding is still in progress and ongoing.
**Includes Tuition Reduction Incentive Program, Senior Citizen credits, and Military Family Education Award.
***Includes Higher Education Emergency Relief Funding (HEERF)

[1]Grants are gift aid offered based on financial need.
[2]Loans consist of borrowed funds that must be repaid.
[3]Scholarships are gift aid offered based on merit, financial need, or a combination of both.
[4]Work-study is a program that provides funding that students can earn through part-time employment.

Fund Name	Type	# Paid Fall/Spring	$ Amount Paid Fall/Spring
Diversity Incentive Grant	GRANT	20	$278,905
Part-Time Enrollment Support	GRANT	13	$15,201
Michigan Indian Tuition Grant	GRANT	48	$769,744
University Student Aid Grant	GRANT	2285	$14,632,129
University Student Grant	GRANT	105	$319,313
Marie Ryding Hardship Grant	GRANT	26	$32,750
TECHAID Loan	LOAN	39	$103,357
906 Scholarship	SCHL	145	$125,934
Air Force Room & Board	SCHL	14	$99,970
Army Room & Board	SCHL	24	$197,265
Athletic Grant-A.D. Assistant	SCHL	9	$35,750
Athletic Grant-eSports	SCHL	36	$119,750
Athletic Grant-Football	SCHL	114	$1,101,203
Athletic Grant-Hockey	SCHL	35	$952,402
Athletic Grant-M Basketball	SCHL	19	$418,638
Athletic Grant-M Nordic Ski	SCHL	12	$109,743
Athletic Grant-M Tennis	SCHL	8	$113,200
Athletic Grant-Men CC & TF	SCHL	23	$122,000
Athletic Grant-Volleyball	SCHL	17	$402,852
Athletic Grant-W Basketball	SCHL	14	$345,026
Athletic Grant-W Nordic Ski	SCHL	8	$107,500
Athletic Grant-W Soccer	SCHL	34	$359,517
Athletic Grant-W Tennis	SCHL	9	$247,369
Athletic Grant-Women CC & TF	SCHL	22	$124,500
Blizzard Scholarship	SCHL	4	$6,000
Create Your Success Scholarship	SCHL	142	$726,000
Detroit Promise Scholarship	SCHL	6	$47,266
FIRST Scholarship MI Tech	SCHL	38	$199,000
Graduate School Academic Excellence Award	SCHL	27	$121,500
Husky Innovation Leaders Award	SCHL	98	$139,000
Impact Scholarship - COB	SCHL	64	$184,926
International Ambassador Scholarship	SCHL	22	$136,200
MI MTU Alumni Legacy Award	SCHL	633	$152,125
Michigan Tech Transfer Achievement	SCHL	117	$170,688

Fund Name	Type	# Paid Fall/Spring	$ Amount Paid Fall/Spring
Michigan Tech Transfer Distinction	SCHL	189	$567,500
MTU Leading Scholars Award	SCHL	29	$819,176
MTU Partner Pathway Award	SCHL	14	$13,000
National Achievement Transfer	SCHL	9	$38,000
National Achievement Scholarship	SCHL	19	$112,000
National Business Scholars	SCHL	70	$1,196,000
National Copper Scholars	SCHL	64	$562,000
National Distinction Scholarship	SCHL	32	$269,167
National Distinction Transfer	SCHL	12	$87,000
National Excellence Scholarship	SCHL	84	$896,094
National Gold Scholars	SCHL	191	$2,484,000
National Leading Scholar	SCHL	46	$796,500
National Platinum Scholars	SCHL	232	$3,479,000
National Prominence Scholarship	SCHL	73	$862,314
National Silver Scholars	SCHL	97	$1,118,500
Presidential Achievement Scholarship	SCHL	123	$164,250
Presidential Copper Scholars	SCHL	137	$131,000
Presidential Distinction Scholarship	SCHL	275	$612,293
Presidential Excellence Scholarship	SCHL	219	$852,001
Presidential Gold Scholars	SCHL	786	$2,301,000
Presidential Leading Scholar	SCHL	120	$1,142,667
Presidential Platinum Scholars	SCHL	641	$3,429,250
Presidential Silver Scholars	SCHL	511	$979,000
Summer Youth Scholars Award	SCHL	36	$78,500
Supplemental University Student Award	SCHL	385	$928,325
United States Scholarship	SCHL	17	$284,793
University Student Enrollment Award	SCHL	1346	$3,805,150
University Room Scholarship	SCHL	13	$84,227
VPA Talent Award	SCHL	49	$45,833
Wade McCree Scholarship	SCHL	4	$74,793
Tuition Reduction Incentive Program		127	$1,238,434
Military Family Education Benefit		5	$86,308
Senior Citizen Benefit		12	$50,401