

Curriculum Vitae
Jiguang Sun

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APPOINTMENTS

Professor	Michigan Technological University	2016 –
Associate Professor	Michigan Technological University	2012 – 2016
Assistant Professor	Delaware State University	2007 – 2012

PROFESSIONAL PREPARATION

Postdoctoral Institutions

PostDoc	University of North Carolina, Charlotte	2006 – 2007
Research Associate	Delaware State University	2005 – 2006

Graduate Institution

Ph.D. Applied Mathematics	University of Delaware	2005
M.S. Computer Science	University of Delaware	2005
M.S. Applied Mathematics	University of Delaware	2001

Undergraduate Institution

B.S. Applied Mathematics	Tsinghua University, China	1996
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ACADEMIC VISITS

Long Term Visitor	Inst. for Mathematics and its Applications, UMN	2017.2.1 – 2017.4.30
Visiting Professor	Inst. of Comp. Math., Chinese Academy of Sciences	2017.6.1 – 2017.6.30

RESEARCH INTERESTS

Numerical Methods for Partial Differential Equations

Inverse Problems

Eigenvalue Problems

Electromagnetic Methods for Geophysics

GRANTS

- **PI**, International Conference on Computational Mathematics and Inverse Problems, NSF DMS-1632364, 2016.
- **Co-PI**, IMA PI Graduate Conference, Institute for Mathematics and its Applications (IMA), Aug.10-14, 2016.
- **PI**, Finite Element Methods for High Order Eigenvalue Problems, NSF, 1521555, 2015.8-2018.7.

- **PI**, CNIC: Direct and Inverse Scattering Methods for Periodic Structures with Arbitrary Profiles and Defects, NSF, 1427665, 2014-2016.
- **PI**, Research Excellence Fund (REF), Research Seed Grant, Finite Element Methods for Eigenvalue Problems, Michigan Tech. 2014-2015.
- **Co-PI**, Center for Advanced Algorithms, Army Research Office, 59537-RT-PIR, 2011 - 2016,
- **PI**: Numerical Methods for Transmission Eigenvalues, NSF DMS-1016092/1321391, 2010 - 2015.
- **Co-PI**: Detection of Improvised Explosive Devices using Electromagnetic Data, Air Force Research Office, AFRO-FA8650-08-C-6929 2008-2011.
- **Co-PI**: Inverse Scattering Theory for MIMO Radar with Applications in Wall Penetration, DEPSCoR W911NF-07-1-0422, 2007-2010.

PUBLICATIONS

Book/Edited Book/Edited Special Issue

1. Finite Element Methods for Eigenvalue Problems, J. Sun and A. Zhou, CRC Press, Taylor & Francis, 2016.
2. Edited Book: Discrete and Computational Mathematics, F. Liu , G.M. N'Guerekata, D. Pokrajac and J. Sun, Nova Science Publisher Inc. 2008.
3. Special Issue: Scattering and Inverse Scattering Problems, A. Lechleiter and J. Sun, *Applicable Analysis* 96, no. 1, 2017.
4. Special Issue: Computational Mathematics and Inverse Problems, C. Bacuta, F. Cakoni, H. Haddar and J. Sun, *Proceedings of the International Conference on Computational Mathematics and Inverse Problems, On occasion of the 60th birthday of Prof. Peter Monk, Computers & Mathematics with Applications, Volume 74, Issue 11, Pages 2639-2928.*

Journal Papers

1. Y. Liu, J. Liu, R. Huang, and J. Sun, *Statistical method for inverse Steklov eigenvalue problem*, in preparation.
2. S. Brenner, J. Sun, and L.Y. Sung, *Hodge decomposition methods for the quad-curl eigenvalue problem*, in preparation.
3. Q. Zhang, J. Sun, and Z. Zhang, *Curl-conforming weak Galerkin method for the quad-curl problem*, submitted.
4. X. Liu and J. Sun, *Data recovery in inverse scattering: from limited-aperture to full-aperture*, submitted.
5. A. Alzaalig, G. Hu, X. Liu, and J. Sun, *Fast acoustic source imaging using multi-frequency sparse data*, submitted.
6. J. Liu, J. Sun, and T. Turner, *Spectral indicator methods for the non-selfadjoint Steklov eigenvalue problem*, submitted.
7. X. Ji, J. Sun and P. Li, *Conforming finite element methods for elasticity transmission eigenvalues*, submitted.
8. K. Wang, J. Sun and Z. Zeng, *Through Wall Detection of Moving Human Beings using UWB Radar*, in revision.
9. R. Huang, J. Sun and C. Yang, *Recursive Integral Method with Cayley Transformation*, *Numerical Linear Algebra with Applications*, online.

10. G. Bao, G. Hu, J. Sun and T. Yin, *Direct and inverse elastic scattering from anisotropic media*, Journal des Mathématiques Pures et Appliquées, online.
11. J. Liu and J. Sun, *Extended sampling method for inverse scattering problems*, Inverse Problems 34 (2018), 085007.
12. R. Zhang and J. Sun, *The reconstruction of obstacles in a waveguide using finite elements*, Journal of Computational Mathematics, Vol. 36, No. 1, 29-46, 2018.
13. R. Zhang, J. Sun, and C. Zheng, *Reconstruction of a penetrable obstacle in non-planar waveguides*, Computers and Mathematics with Applications, Vol. 74, Is. 11, 2739-2751, 2017.
14. S. Brenner, J. Sun, and L.Y. Sung, *Hodge decomposition methods for a quad-curl problem on planar domains*, Journal of Scientific Computing, Vol. 73, Iss. 2-3, 495-513, 2017.
15. F. Zeng, X. Liu, J. Sun and L. Xu, *Reciprocity gap method for an interior inverse scattering problem*, Journal of Inverse and Ill-posed Problems, Vol. 25, Iss. 1, 57-68, 2017.
16. R. Huang, A. Struthers, J. Sun, and R. Zhang, *Recursive integral method for transmission eigenvalues*, Journal of Computational Physics, Vol. 327, 830-840, 2016.
17. F. Zeng, X. Liu, J. Sun and L. Xu, *The reciprocity gap method for a cavity in an inhomogeneous medium*, Inverse Problems and Imaging, Vol. 10, No. 3, 855-868, 2016.
18. F. Zeng, J. Sun and L. Xu, *A spectral projection method for transmission eigenvalue problem*, Science China Mathematics, Vol. 59, No. 8, 1613-1622, 2016.
19. X. Ji, H. Geng, J. Sun and L. Xu, *C^0 IPG for a fourth order eigenvalue problem*, Communication in Computational Physics, Vol. 19, Iss. 2, 393-410, 2016.
20. H. Geng, X. Ji, J. Sun and L. Xu, *C^0 IPG method for the transmission eigenvalue problem*, Journal of Scientific Computing, Vol. 68, Iss. 1, 326-338, 2016.
21. J. Sun, *A mixed finite element for the quad-curl eigenvalue problem*, Numerische Mathematik, Vol. 132, No. 1, 185-200, 2016.
22. S. Brenner, P. Monk and J. Sun, *C^0 IPG for the biharmonic eigenvalue problem*, Spectral and High Order Methods for Partial Differential Equations, Lect. Notes Comput. Sci. Eng. 106, 3-15, 2015.
23. R. Zhang and J. Sun, *An efficient finite element method for grating profile reconstruction*, Journal of Computational Physics, Vol. 302, 405-419, 2015.
24. F. Zeng, T. Turner, and J. Sun, *Some results on electromagnetic transmission eigenvalues*, Mathematical Methods in Applied Sciences, Vol. 38, no. 1, 155-163, 2015.
25. F. Cakoni, P. Monk and J. Sun, *Error analysis of the finite element approximation of transmission eigenvalues*, Computational Methods in Applied Mathematics, Vol. 14 (2014), Iss. 4, 419-427.
26. X. Ji, J. Sun, and Y. Yang, *Optimal penalty parameter for C^0 IPDG*, Applied Mathematics Letters, 37(2014), 112-117.
27. X. Liu and J. Sun, *Reconstruction of Neumann eigenvalues and the support of a sound hard obstacle*, Inverse Problems, 30 (2014), No. 6, 065011.
28. I. Harris, F. Cakoni and J. Sun, *Transmission eigenvalues and non-destructive testing of anisotropic magnetic materials with voids*, Inverse Problems, 30 (2014), No. 3, 035016.
29. X. Ji, J. Sun, and H. Xie, *A Multigrid Method for Helmholtz Transmission Eigenvalue Problem*, Journal of Scientific Computing, Vol. 60 (2014), Iss. 3, 276-294.
30. X. Ji and J. Sun, *A multilevel finite element methods for transmission eigenvalues of anisotropic media*, Journal of Computational Physics, Vol. 255 (2013), 422-435.
31. J. Sun and L. Xu, *Computation of Maxwell's transmission eigenvalues and its applications in inverse medium problems*, Inverse Problems, 29 (2013), 104013.

32. F. Zeng, P. Suarez, and J. Sun, *A decomposition method for an interior inverse scattering problem*, Inverse Problems and Imaging, Vol. 7 (2013), Iss. 1, 291-303.
33. J. Sun and C. Zheng, *Reconstruction of obstacles embedded in waveguides*, Contemporary Mathematics, Vol. 586 (2013), 341-350.
34. J. Li, Z. Zeng, J. Sun and F. Liu, *Through-Wall Detection of Human Being's Movement by UWB Radar*, IEEE Geoscience and Remote Sensing Letters, Vol.9 (2012) Iss. 6, 1079-1083.
35. P. Monk and J. Sun, *Finite element methods of Maxwell transmission eigenvalues*, SIAM Journal on Scientific Computing, 34(3) (2012), B247-B264.
36. X. Ji, J. Sun and T. Turner, *A mixed finite element method for Helmholtz Transmission eigenvalues*, ACM Transaction on Mathematical Software, Vol. 38 (2012), No.4, Algorithm 922.
37. J. Sun, *An eigenvalue method using multiple frequency data for inverse scattering problems*, Inverse Problems, Vol. 28 (2012), 025012.
38. J. Sun, *A new family of high regularity elements*, Numerical Methods for Partial Differential Equations, Vol. 28 (2012), Iss. 1, 1-16.
39. F. Cakoni, M. Di Cristo and J. Sun, *A multistep reciprocity gap functional method for imaging of buried objects in layered medium*, Complex Variables and Elliptic Equations, Vol. 57 (2012), Iss. 2-4, 261-176.
40. F. Zeng, F. Cakoni and J. Sun, *An inverse electromagnetic scattering problem for cavity*, Inverse Problems, Vol. 27 (2011), 125002.
41. J. Sun, *Iterative method for transmission eigenvalues*, SIAM Journal of Numerical Analysis, Vol. 49 (2011), No. 5, 1860-1874.
42. C. Bacuta, J. Sun and C. Zheng, *Partition of unity refinement*, Numerical Methods for Partial Differential Equations, Vol. 27 (2011), Iss. 4, 803-817.
43. G. Hsiao, F. Liu, J. Sun and L. Xu, *A coupled BEM and FEM for the interior transmission problem*, Journal of Computational and Applied Mathematics, Vol. 235 (2011), Iss. 17, 5213-5221.
44. J. Sun, *Estimation of the transmission eigenvalue and the index of refraction using Cauchy data*, Inverse Problems, Vol. 27 (2011), 015009.
45. F. Cakoni, D. Colton, P. Monk and J. Sun, *The inverse electromagnetic scattering problem for anisotropic media*, Inverse Problems, Vol. 26 (2010), 074004.
46. D. Colton, P. Monk and J. Sun, *Analytical and computational methods for transmission eigenvalues*, Inverse Problems, Vol. 26 (2010) No. 4, 045011.
47. J. Sun and C. Zheng, *Numerical scattering analysis of TE plane waves by a metallic diffraction grating with local defects*, J. Opt. Soc. Am. A, Vol. 26 (2009), Iss. 1, 156 -162.
48. M. Ehrhardt, J. Sun, and C. Zheng, *Evaluation of scattering operators for semi-infinite periodic arrays*, Communications in Mathematical Sciences, Vol. 7 (2009), Iss. 2, 347-364.
49. Z. Zeng, F. Wu, L. Huang, F. Liu, and J. Sun, *The adaptive chirplet transform and its application in GPR target detection*, Applied Geophysics, Vol.6 (2009), No.2, 192-200.
50. W. Cai, X. Ji, J. Sun and S.H. Shao, *A Schwarz generalized eigen-oscillation spectral element method (GeSEM) for 2-D high frequency electromagnetic scattering in dispersive inhomogeneous media*, Journal of Computational Physics, Vol. 227 (2008), 9933-9954.
51. Z. Zeng, L. Huang, S. Liu, F. Liu, J. Sun, *The very low-frequency step-frequency GPR system and its application to active fault detection*, Near Surface Geophysics, Vol. 6 (2008), No. 3, 167-172.
52. P. Monk and J. Sun, *Inverse scattering using finite elements and gap reciprocity*, Inverse Problems and Imaging, Vol. 1 (2007), No. 4, 643-660.

53. M. Di Cristo and J. Sun, *The Determination of the Support and Surface Conductivity of a Partially Coated Buried Object*, Inverse Problems, Vol. 23 (2007), 1161-1179.
54. P. Monk and J. Sun, *Analysis of an eddy current and micromagnetic model*, Applicable Analysis, Vol. 85 (2006), No. 12, 1509-1525.
55. M. Di Cristo and J. Sun, *An inverse scattering problem for a partially coated buried obstacle*, Inverse Problems, Vol. 22 (2006), No. 6, 2331-2350.
56. J. Sun and P. Monk, *An adaptive algebraic multigrid algorithm for micromagnetism*, IEEE Transaction on Magnetics, Vol. 42 (2006), Iss. 6, 1643 - 1647.
57. J. Sun, F. Collino, P. Monk and L. Wang, *An eddy-current and micromagnetism model with applications to disk write heads*, International Journal for Numerical Methods in Engineering, Vol. 60 (2004), 1673-1698.

Conference Papers

58. X. Ji and J. Sun, *A multilevel finite element methods for transmission eigenvalues of anisotropic media*, Proceeding of the 29th international review of progress in applied computational electromagnetics, March 24th-28th, 2013, Monterey, CA.
59. T. Turner, F. Zeng and J. Sun, *On electromagnetic transmission eigenvalues*, Proceedings of the 14th International Conference on Ground Penetrating Radar, IEEE Conference publications, Tongji University, Shanghai, 2012, 291-295.
60. Z. Zeng, J. Sun, J. Li, F. Liu, Q. Lu, X. Chen, *The analysis of TWI data for human being's periodic motions*, Geoscience and Remote Sensing Symposium (IGARSS), IEEE International, 2011, 862-865.
61. F. Cakoni, D. Colton, and J. Sun, *Estimation of Dirichlet and transmission eigenvalues by near field Linear Sampling Method*, Proceedings of the 10th International Conference on the Mathematical and Numerical Aspects of Waves, Vancouver, Canada, July 25-29, 2011, 431-434.
62. Z. Zeng, J. Sun, Y. Liu, T. Turner, F. Zeng, and F. Liu, *Detection of periodic motions of visually obscured human beings using UWB radar*, Proceedings of the 4th International Conference on Environmental and Engineering Geophysics, 14-19 June 2010, Chengdu, China, 642-647.
63. C. Bacuta and J. Sun, *Notes on the Schwarz Alternating Method for Partition of Unity FEM*, DCDIS A Supplement, 2009, 15 - 21.
64. Q. Li, Z. Zeng, J. Sun and F. Liu, *Featured points method of amplitude recovery*, Proceedings of SPIE, Signal and Data Processing of Small Targets, 2009, San Diego, California, United States, Volume 7445. 0A1-0A9.
65. Z. Zeng, F. Liu, J. Sun, and C. Liu, *Multiple Frequency Electromagnetic Response of the Dispersive Layer*, SAGEEP, 21(2008), 204-208.
66. Z. Zeng, F. Liu, L. Hang, J. Sun, X. Xia, *The application of adaptive chirplet transform in target detection of GPR data*, Proceeding of the 3rd International Conference on Environmental and Engineering Geophysics, 15-20 June 2008, Wuhan, China, 298-303.
67. F. Liu, X. Shi, J. Sun, Z. Zeng and G. Zhang, *UXO and landmine detection by ground penetrating radar and character analysis*. Discrete and Computational Mathematics, Nova Science, 2008, 139-160.
68. J. Sun, F. Liu and X. Shi, *Weighted Backprojection Algorithm for Unevenly Sampled Radar Data in GPR Imaging*. Proceedings of the 11th International Conference on Ground Penetrating Radar, Columbus, Ohio, 2006.
69. C. Bucuta and J. Sun, *Partition of Unity Finite Element Method Implementation for Poisson Equation*, Advances in Applied and Computational Mathematics, Nova Science, 2006, 35-46.

Thesis

Numerical Analysis of Nonlinear Models of Ferromagnetic Materials, Ph.D. Thesis, University of Delaware, 2005.

AWARDS, ETC.

- **Outstanding Research Award**, senior level, Department of Mathematical Sciences, Michigan Technological University, 2016.
- **Kliakhandler Fellow**, Department of Mathematical Sciences, Michigan Technological University, 2015.
- **Outstanding Faculty Services Award**, Department of Mathematical Sciences, Michigan Technological University, 2014.
- **Travel Award**, Structure Preserving Discretization of Partial Differential Equations, IMA, October 22-24, 2014
- **Travel Award**, Careers and Opportunities in Industry for Mathematical Scientists, IMA, Apr. 7-9, 2014.
- **Outstanding Research Award**, senior level, Department of Mathematical Sciences, Michigan Technological University, 2013.
- **Consultant**, "Application of EM Waves to Problems in Nondestructive Testing and Target Identification", Air Force Office of Scientific Research, 2012-2013.
- **Highlights of Inverse Problems, 2012**, *An eigenvalue method using multiple frequency data for inverse scattering problems*, Inverse Problems, Vol. 28 (2012), 025012.
- **Merit Award**, Delaware State University, 2009, 2010, 2011, 2012.
- **PI: SMILE Project**, Delaware State University, 2010.
- **NSF IPAM Travel Award**, Metamaterial: Applications, Analysis and Modeling, UCLA, January 25 - 29, 2010.
- **Professional Development Award**, Delaware State University, 2009, 2010.
- **Tsinghua Global Scholars Fellowship**, Project No. ZMXZ20100043, Dec, 2009.
- **Travel Award**, Applied Inverse Problems Conference, Vienna, Austria, Office of Naval Research, 2009.
- **Travel Award**, AMS-IMS-SIAM Summer Research Conference on "Mathematical Modeling of Novel Optical Materials and Devices", Snowbird, Utah, Jun. 2005.
- **Travel Award**, The 7th International Conference on Mathematical and Numerical Aspects of Waves (WAVES'05), Brown University, Jun. 2005.
- **Higher Education Teaching Certificate**, University of Delaware, May 2005.
- **Outstanding Poster Award**, 1005th AMS Meeting, April 2005.
- **Excellent Student Award**, Tsinghua University, 1993-1996.

POSTDOCS/GRADUATE STUDENTS

Postdocs

1. Ruming Zhang, 2014-2015. (Currently at University of Bremen, Germany.)

Current Graduate Students

1. Yanfang Liu
2. Ruihao Huang

Former Ph.D. Students

1. Ala Alzaalig, Ph.D. 2017.
2. Tiara Turner, Ph.D., 2013. (Currently: Assistant Professor, University of Maryland Eastern Shore.)
3. Fang Zeng, Ph.D., 2013. (Currently: Associate Professor, Chongqing University, China.)

Visiting Ph.D. Students

1. Hongrui Geng, Chongqing University, 2013-2014.
2. Kun Wang, Jilin University, 2015-2016.

Former M.S. Students

1. Peter Solfest, 2014
2. Nathasha Weerasinghe, 2014
3. Joe Welch, M.S., 2008.
4. Ashanti Pitts, M.S., 2007.

UNIVERSITY SERVICES

1. Reviewer, Summer Undergraduate Research Fellowship Program, Feb. 2018.
2. Member, Dean's Searching Committee, College of Art and Sciences, Michigan Technological University, 2017-2018.
3. External advocate, Early Career Management (ECM) Committee, Michigan Technological University, 2017-2018.
4. Reviewer, Research Excellence Fund Proposals, Michigan Technological University, 2017.
5. Reviewer, Research Excellence Fund Proposals, Michigan Technological University, 2015.
6. Faculty Judge, Graduate Research Colloquium, Michigan Technological University, Feb. 2014.
7. Member, Advisory Committee, Department of Mathematical Sciences, MTU, 2013-2017.
8. Director of Graduate Program, Department of Mathematical Sciences, MTU, 2013-2017.
9. Member, Graduate Committee, Department of Mathematical Sciences, MTU, 2012-2013.
10. Member, Hiring Committee, Department of Mathematical Sciences, MTU, 2012-2013.
11. Member, University Strategic Implementation Plan Committee, DSU, 2011 - 2012.

12. Member, Integration Committee, College of Mathematics, Natural Sciences and Technology, DSU, 2010-2011
13. Member, Scheduling Committee, Department of Mathematical Sciences, Delaware State University, 2010-2011, 2011-2012
14. Chair, Website Committee, Department of Mathematical Sciences, Delaware State University, 2009-2010, 2010-2011, 2011-2012.
15. Member, Committee of Graduate Curriculum and Admission, Department of Mathematical Sciences, DSU, 2009-2010, 2010-2011.
16. Faculty Senator, 2008-2009, Department of Applied Mathematics and Theoretical Physics, Delaware State University.
17. Chair, Student Committee, 2007-2008, Department of Applied Mathematics and Theoretical Physics, Delaware State University.
18. Member, Safety Committee, 2007-2008, College of Mathematics, Natural Sciences, and Technology, Delaware State University.
19. Member, By-Law Committee, 2007-2008, Department of Applied Mathematics and Theoretical Physics, Delaware State University.
20. Member, Curriculum Committee, 2007-2009, Department of Applied Mathematics and Theoretical Physics, Delaware State University.
21. Member, Administration Committee, 2007-2009, Department of Applied Mathematics and Theoretical Physics, Delaware State University.
22. Member, Strategic Planning Committee, 2007, Department of Applied Mathematics and Theoretical Physics, Delaware State University.

PROFESSIONAL SERVICES

- **Co-organizer**, Mini-symposium on Mathematical Aspects of Computational Electromagnetics, ICCEM 2018, March 26-28, 2018, Chengdu, China.
- **Co-organizer**, International Workshop on Eigenvalue Problems Theory, Approximation and Applications, Tsinghua Sanya International Mathematics Forum, December 25-29, 2017.
- **Co-organizer**, Mini-symposium on Recent Advances of Transmission Eigenvalues, Applied Inverse Problems Conference, Zhejiang University, China, May 29 - June 2, 2015.
- **Associated Editor**, Applicable Analysis, 2016 -
- **Guest Editor**, Computers and Mathematics with Applications, Special Issue, Proceedings of the International Conference on Computational Mathematics and Inverse Problems, 2016.
- **Guest Editor**, Applicable Analysis, Special Issue on Recent Advances in Inverse Scattering Theory, 2015.
- **Book Proposal Reviewer**, Oxford University Press, Aug. 2015.
- **Co-organizer**, Mini-symposium on Theory, Computation, and Application of Transmission Eigenvalues, ICIAM, Beijing, Aug.10-15, 2015.

- **Co-organizer**, Mini-symposium on Computation of Interior Transmission Eigenvalues, Applied Inverse Problems Conference, University of Helsinki, Finland, May, 2015.
- **International Thesis Reviewer**, University of Bremen, Germany and Ecole Polytechnique, France, 2015.
- **International Thesis Reviewer**, Aalto University, Finland, 2015.
- **Reviewer**, National Science Foundation, U.S.A., May 2015.
- **Reviewer**, Research Excellence Fund, Michigan Technological University, 2015.
- **External Reviewer**, Natural Sciences and Engineering Research Council of Canada (NSERC), Jan. 2014.
- **Co-organizer**, Special Session on Applied Analysis and Inverse Problems, AMS Southeastern Sectional Meeting, October 5-6, 2013, University of Louisville, Louisville, KY.
- **Chair of the Organizing Committee**, The Copper Country Workshop on Numerical Analysis and Inverse Problems, Michigan Technological University, Houghton, MI, Aug. 12-14, 2013.
- **Co-organizer**, Mini-symposium on Recent Developments in Inverse Scattering Theory, International Conference on Novel Direction in Inverse Scattering, July 29 - Aug. 2, 2013, University of Delaware.
- **Co-organizer**, The 1st Chongqing Workshop on Applied Mathematics, May, 2013
- **Organizer**, Mini-symposium on Recent Developments of Qualitative Methods in Inverse Scattering, International conference on Inverse Problems and Related Topics, Nanjing, China, Oct. 22-26, 2012.
- **NSF Panelist**, 2011, 2012
- Reviewer for AMS (American Mathematical Society) and ZBMATH (Zentralblatt MATH).
- Reviewer for Inverse Problems, Journal of Computational Physics, IMA Journal of Numerical Analysis, Journal of Scientific Computing, Journal of Applied and Computational Mathematics, Inverse Problems and Imaging, Geophysics, International Journal of Applied Mathematics and Statistics, Computers and Mathematics with Applications, Mathematical Methods in the Applied Sciences, Applicable Analysis, Applied Numerical Mathematics, International Journal of Numerical Analysis and Modeling, Advances in Computational Mathematics, Communications in Computation Physics, Inverse Problems in Science and Engineering, Inverse and Ill-posed Problems.
- **Co-Organizer**, Mini-symposium on Direct and Inverse Scattering for Wave Propagation, The 8th international conference on scientific computing and applications, UNLV, Apr. 1-4, 2012.
- **Organizer**, Session of Numerical Method for Differential Equations, The 6th International Conference On Differential Equations and Dynamical Systems, May 22-26, 2008, Baltimore, Maryland, USA
- **Co-organizer** of the 2007 Applied Mathematics Workshop, Delaware State University, 2007.
- **Co-organizer** of the 2006 Applied Mathematics Workshop, Delaware State University, 2006.

PRESENTATIONS

1. Finite Element Methods for Eigenvalue Problems, University of Science and Technology, Jan. 9, 2018. (Invited Seminar Talk)
2. Direct and Inverse Steklov Eigenvalue Problems, Chinese Academy of Sciences, Jan. 8, 2018. (Invited Seminar Talk)
3. Direct and Inverse Steklov Eigenvalue Problems, Beijing Computational Science Research Center, Jan. 5, 2018. (Invited Seminar Talk)
4. Non-selfadjoint Eigenvalue Problems and Spectral Indicator Method, International Workshop on Eigenvalue Problems: Theory, Approximation and Applications, Tsinghua Sanya International Mathematics Forum, Dec. 25-29, 2017.
5. Finite Element Methods for Eigenvalue Problems, Fudan University, Shanghai, Dec. 18, 2017. (Invited Seminar Talk)
6. Spectrum Problems in Inverse Scattering Theory, Institute of Applied Mathematics, Chinese Academy of Sciences, Aug. 28, 2017. (Invited Seminar Talk)
7. Spectrum Problems in Inverse Scattering Theory, HeiLongJiang University, Aug 25, 2017. (Invited Seminar Talk)
8. Recursive Integral Method for Eigenvalue Problems, Harbin Institute of Technology, Aug. 21-23, 2017. (Invited Talk Series)
9. Spectrum Indicator Method with Cayley Transformation for Matrix Eigenvalue Problems, Advances of Numerical PDE: Algorithm and Theory, South China Normal University, Guang Zhou, Aug. 13-16, 2017. (Invited Talk)
10. Spectrum Indicator Method with Cayley Transformation for Eigenvalue Problems, South East University, Nanjing, China, Aug. 2, 2017. (Invited SeminarTalk)
11. Spectrum Indicator Method with Cayley Transformation for Matrix Eigenvalue Problems, The 14th US National Congress on Computational Mechanics, Montreal, July 17-20, 2017. (Invited Mini-symposium Talk)
12. A Mixed FEM for Quad-curl Eigenvalue Problem, The 14th US National Congress on Computational Mechanics, Montreal, July 17-20, 2017. (Invited Mini-symposium Talk)
13. Spectrum Indicator Method with Cayley Transformation for Matrix Eigenvalue Problems, Workshop on Inverse Problems: Analysis and Computation, Jilin University, July 8-9, 2017. (Invited Talk)
14. Recursive Integral Method with Cayley Transformation for Matrix Eigenvalue Problems, Workshop on Computation of Eigenvalue Problems, Chinese Academy of Sciences, July 4-6, 2017. (Invited Talk)
15. Recursive Integral Method with Cayley Transformation, Changsha University of Science & Technology, June 21, 2017. (Invited Seminar Talk)
16. Recursive Integral Method for Eigenvalue Problems, Chinese Academy of Sciences, June 9, 16, 23, 30, 2017. (Invited Talk Series)
17. Recursive Integral Method with Cayley Transformation, The Third International Conference on Engineering and Computational Mathematics (ECM2017), The Hong Kong Polytechnic University, May 31 - June 2, 2017. (Invited Talk)

18. Through-Wall Detection of Human Being's Movement by UWB Radar, Applied Inverse Problems Conference, Zhejiang University, May 29 - June 2, 2017. (Invited Mini-symposium Talk)
19. Recursive Integral Method with Cayley Transformation, Finite Element Circus, Rutgers University, April 21-22, 2017.
20. Recursive Integral Method with Cayley Transformation, Southern Methodist University, Apr. 12, 2017. (Invited Seminar Talk)
21. RIM-C for Transmission Eigenvalues, SIAM Conference on Computational Sciences and Engineering (CSE), Atlanta, Feb. 27 - Mar. 3, 2017. (Invited Mini-symposium Talk)
22. A Novel Eigensolver with Cayley Transformation, Institute of Mathematics and its Applications (IMA), University of Minnesota, Feb 23rd, 2017. (Invited Seminar Talk)
23. Finite Element Methods for Eigenvalue Problems, UESTC, ChengDu, Dec. 23rd, 2016. (Invited Seminar Talk)
24. A Novel Eigenvalue Solver Using Spectrum Projection, 20th IMACS World Congress, Xiamen University, Dec. 10-14, 2016. (Invited Mini-symposium Talk)
25. A Novel Solver for Transmission Eigenvalues, Mathematical Analysis of Metamaterials and Applications Workshop, TSIMF, Sanya, Dec. 5-9, 2016. (Invited Talk)
26. A novel parallel eigensolver using spectral projection (an eigensolver which does not actually compute eigenvalues), Finite Element Circus, WPI, Oct. 14-15, 2016.
27. Through-Wall Detection of Human Being's Movement by UWB Radar, Harbin Institute of Technology, July 27, 2016. (Invited Seminar Talk)
28. Recursive integral method for transmission eigenvalues, Workshop on Inverse Problems, Computation, and Applications, Zhejiang University, July 3-4, 2016. (Invited Talk)
29. A mixed finite element method for the quad-curl eigenvalue problems, Chinese Academy of Sciences, June 28, 2016. (Invited Seminar Talk)
30. Spectrum Projection Method for a Non-selfadjoint Eigenvalue Problem, CSRC, June 23, 2016. (Invited Seminar Talk)
31. A probing method for the transmission eigenvalue problem, Chinese Academy of Sciences, June 23, 2016. (Invited Seminar Talk)
32. FEM Algorithm for Several Inverse Scattering Problems of Periodic Structures, The Eighth International Workshop on Theoretical and Computational Analyses for Inverse Problems, Chinese Academy of Sciences, June 18-19, 2016. (Plenary Talk)
33. Recursive integral method for transmission eigenvalues, Fudan University, China, June 2, 2016. (Invited Seminar Talk)
34. Recursive integral method for transmission eigenvalues, Chongqing Technology University, China, May 24, 2016. (Invited Seminar Talk)
35. A mixed finite element method for the quad-curl eigenvalue problems, Xi'an Jiaotong University, May 16, 2016. (Invited Seminar Talk)
36. A probing method for the transmission eigenvalue problem, Finite Element Circus, University of Maryland, April 15-16, 2016.

37. An efficient finite element method for grating profile reconstruction, The 40th SIAM Southeastern Atlantic Section Meeting, University of Georgia, Mar. 12-13, 2016. (Invited Mini-symposium Talk)
38. A probing method for the transmission eigenvalue problem, Chongqing University, Dec. 15, 2015. (Invited Seminar Talk)
39. Recursive integral method for transmission eigenvalues, Chinese Academy of Sciences, China, Dec. 21, 2015. (Invited Seminar Talk)
40. Recursive integral method for transmission eigenvalues, Heilongjiang University, China, Aug. 23rd, 2015. (Invited Seminar Talk)
41. Numerical methods for transmission eigenvalues, The 2nd Chongqing Workshop on Computational and Applied Mathematics, Chongqing university, China, Aug. 16-18, 2015. (Invited Talk)
42. A mixed finite element method for the quad-curl eigenvalue problems, The 8th International Congress on Industrial and Applied Mathematics, Beijing, China, Aug. 10-14, 2015. (Invited Mini-symposium Talk)
43. An efficient finite element method for grating profile reconstruction, The 8th International Congress on Industrial and Applied Mathematics, Beijing, China, Aug. 10-14, 2015. (Invited Mini-symposium Talk)
44. The reconstruction of obstacles in a waveguide using finite elements, Chinese Academy of Sciences, Beijing, China, Jul. 26, 2015. (Invited Seminar Talk)
45. Recursive integral method for transmission eigenvalues, The 3rd Computation Mathematics Day, Chongqing University, Jun. 27, 2015. (Invited Talk)
46. An efficient finite element method for grating profile reconstruction, Applied Inverse Problems Conference, University of Helsinki, Finland, May 25-29, 2015. (Invited Seminar Talk)
47. The reconstruction of obstacles in a waveguide using finite elements, iWap Workshop, University of Bremen, Germany, Apr. 7-10, 2015. (Invited Talk)
48. Recursive integral method for transmission eigenvalues, Finite Element Circus, George Mason University, Mar. 27-28, 2015.
49. C^0 IPG Method for Biharmonic Eigenvalue Problems, AMS Central Spring Sectional Meeting, Michigan State University, East Lansing, MI, March 14-15, 2015. (Invited Seminar Talk)
50. PDE-Constraint Optimization, Department of Geophysics, Jilin University, Dec. 15-26, 2014. (Invited Lecture Series)
51. C^0 IPG Method for Biharmonic Eigenvalue Problems, LSEC, Chinese Academy of Sciences, Beijing, China, Dec. 12, 2014. (Invited Seminar Talk)
52. Transmission eigenvalues and non-destructive testing of anisotropic magnetic materials with voids, The 5th International Conference on Scientific Computing and Partial Differential Equations, Dec. 8-12, 2014. (Invited Mini-symposium Talk)
53. C^0 IPG for biharmonic eigenvalue problems, AMS Section Meeting, University of North Carolina at Greensboro, Nov. 8-9, 2014. (Invited Mini-symposium Talk)
54. Numerical Methods for Transmission Eigenvalues, Applied Mathematics Seminar, Department of Mathematics, Michigan State University, Oct. 17, 2014. (Invited Seminar Talk)
55. Numerical Methods for Transmission Eigenvalues, Workshop on Computational Methods for Eigenvalue Problems, LESC, Chinese Academy of Sciences, Jul. 15-16, 2014. (Invited Talk)

56. Transmission Eigenvalues: Background, Application, and Computation, Harbin Institute of Technology, Jul. 3, Jul. 4, Jul. 9, 2014. (Invited Seminar Talks)
57. An eigenvalue method in inverse scattering, University of Heilongjiang, Jun. 26, 2014. (Invited Seminar Talk)
58. C^0 IPDG for the biharmonic eigenvalue problem, The Third International Conference on Interdisciplinary Applied and Computational Mathematics, Zhejiang University, Hangzhou, China, June 7-10, 2014. (Invited Talk)
59. C^0 IPDG for the biharmonic eigenvalue problem, AMCS Seminar, University of Iowa, Apr. 11, 2014. (Invited Talk)
60. Numerical Methods for Transmission Eigenvalues, Louisiana State University, Mar. 11, 2014. (Invited Seminar Talk)
61. Reconstruction of Neumann eigenvalues and support of a sound-hard obstacle, Chinese Academy of Sciences, Dec. 20, 2013. (Invited Seminar Talk)
62. A GPU-based recursive eigenvalue solver with application for transmission eigenvalues, The Second International Conference on Engineering and Computational Mathematics, Dec. 16-18, 2013, The Hong Kong Polytechnic University, Hong Kong. (Invited Workshop Talk)
63. Numerical methods for transmission eigenvalues, Chongqing University, Dec. 15, 2013, Chongqing, China. (Colloquium Talk)
64. A GPU-based recursive eigenvalue solver, Finite Element Circus, Oct. 18-19, 2013, University of Delaware.
65. An inverse scattering problem for cavities, AMS Southeastern Sectional Meeting, October 5-6, 2013, University of Louisville, Louisville, KY. (Invited Mini-symposium Talk)
66. Computation of Maxwell's transmission eigenvalues and its application in the inverse medium problems, International Conference on Novel Direction in Inverse Scattering, July 29 - Aug. 2, 2013, University of Delaware. (Mini-symposium Talk)
67. A novel eigenvalue method in inverse scattering, The 5th international workshop on theoretical and computational analysis for inverse problems, July 19-21, 2013, Taiyuan, China. (**Plenary Talk**)
68. Numerical methods for transmission eigenvalues and their applications, LSEC, Chinese Academy of Sciences, July 16, 2013. (Invited Talk)
69. Numerical methods for transmission eigenvalues and their applications, The Third International Workshop on Computational Inverse Problems and Applications, July 8-11, Nanchang, China. (Invited Talk)
70. A multilevel finite element method for transmission eigenvalues of anisotropic media and its application in inverse medium problems, AIPC 2013, Daejeon, Korea, July 1-5, 2013. (Invited Mini-symposium Talk)
71. An eigenvalue method for the sound hard obstacles in inverse scattering, AIPC 2013, Daejeon, Korea, July 1-5, 2013. (Invited Mini-symposium Talk)
72. Numerical methods for transmission eigenvalues and their applications, Tsinghua University, July 25, 2013. (Invited Talk)
73. A mixed finite element method for the quad-curl eigenvalue problems, The 2nd International Conference on Interdisciplinary Applied and Computational Mathematics, Hangzhou, June 19 - 13, 2013

74. Reconstruction of sound hard obstacles using an eigenvalue method, Workshop on Inverse Problems in Scattering and Imaging, Purdue University, West Lafayette, IN, April 13, 2013.
75. A multilevel finite element method for transmission eigenvalues of anisotropic media, ICES 2013, (Invited Talk)
76. A multilevel finite element method for transmission eigenvalues of anisotropic media, University of Delaware, Nov. 20, 2012. (Invited Talk)
77. An eigenvalue method in inverse scattering, International conference on Inverse Problems and Related Topics, Nanjing, China, Oct. 22-26, 2012. (Invited Talk)
78. Numerical methods for transmission eigenvalues, International Workshop on Recent Advances in Scientific and Engineering Computing at Shanghai Jiao Tong University, Shanghai, China, Oct. 20-22, 2012. (Invited Talk)
79. A C^0 IPDG method for the bi-harmonic eigenvalue problem, Finite Element Circus, University of Pittsburg, Oct. 19-20, 2012.
80. Numerical method for transmission eigenvalues, Wayne State University, Oct. 8, 2012. (Invited Colloquium Talk)
81. A decomposition method for an interior inverse scattering problem, Chinese Academy of Sciences, June, 2012. (Invited Talk)
82. A mixed finite element method for the quad-curl problem, Tsinghua University, June, 2012. (Invited Colloquium Talk)
83. An eigenvalue method using multiple frequency data, International Conference on Applied Mathematics: Modeling, Analysis, and Computation, City University of Hong Kong, May 28-Jun 1, 2012. (Invited Talk)
84. A mixed finite element method for the quad-curl problem, Finite Element Circus, Rutgers University, Apr. 13-14, 2012.
85. An eigenvalue method using multiple frequency data, The 8th international conference on scientific computing and applications, UNLV, Apr. 1-4, 2012.
86. Finite element methods for Maxwell's transmission eigenvalues, AMS Section Meeting, University of South Florida, Mar. 17-18, 2012. (Invited Talk)
87. A coupled A coupled BEM and FEM for the interior transmission problem, Finite Element Circus, UCONN, Oct. 14-15, 2011.
88. A coupled A coupled BEM and FEM for the interior transmission problem, 2011 Fall Western Section Meeting, University of Utah, Salt Lake City, UT, October 22-23, 2011. (Invited Talk)
89. Estimation of Dirichlet and transmission eigenvalues by near field Linear Sampling Method, The 10th International Conference on the Mathematical and Numerical Aspects of Waves, July 25-29, Simon Fraser University, Vancouver, Canada.
90. Finite element methods for Maxwell's transmission eigenvalues, International Conference on Interdisciplinary Applied and Computational Mathematics, 17-21 June, 2011, Zhejiang University, Hangzhou, China. (Invited Talk)
91. An inverse electromagnetic scattering problem for cavity, International Conference on Applied Mathematics and Interdisciplinary Research, June 13-15, 2011, Nankai University, Tianjin, China.

92. Estimation of transmission eigenvalues and index of refraction from near field data, Applied Inverse Problems Conference, May 23-27, 2011 Texas A&M University, College Station, Texas. (Invited Talk)
93. A simple finite element method for transmission eigenvalues, Finite Element Circus, IMA, University of Minnesota, Nov. 5 - 6, 2010.
94. Estimation of transmission eigenvalues and index of refraction from near field data, Scattering theory seminar, University of Delaware, Oct. 21, 2010. (Invited Talk)
95. Iterative methods for transmission eigenvalues, International Workshop on Inverse Problems and Applications, Donghua University of Technology, Jiangxi, China, Jun. 2 - 5, 2010. (Invited Talk)
96. Characterization of objects in waveguides, Chinese Academy of Science, Beijing, China, May 19, 2010. (Invited Talk)
97. Iterative methods for transmission eigenvalues, Tsinghua University, Beijing, China, May. 17, 2010. (Invited Talk)
98. Analytical and computational methods for transmission eigenvalues, SIAM Conference on Imaging Science, Apr. 12 -14, 2010, Chicago.
99. Reciprocity gap functional and its applications in inverse scattering, *The International Workshop on Computational Methods for Ill-Posed Problems*, Dec. 18-20, 2009, Sun Yat-Sen University, China. (Invited Talk)
100. A new family of high regularity elements, *Finite Element Circus*, The University of Tennessee, Knoxville, October 16-17, 2009.
101. Coupling boundary element and finite element for the interior transmission problem, *Advances in Boundary Integral Equations and Related Topics*, A conference in honor of George C. Hsiao's 75th Birthday, August 7-9 2009, University of Delaware, Newark, DE, USA. (Invited Talk)
102. Numerical studies of the reciprocity gap functional method in inverse scattering, *Conference on Applied Inverse Problems*, July 20-24, 2009, Vienna, Austria. (Invited Talk)
103. Finite Element Methods for the Interior Transmission Problems, Inverse Scattering Seminar, University of Delaware, April 16, 2009. (Invited Talk)
104. Numerical Scattering Analysis of TE Plane Waves by a Metallic Diffraction Grating with Local Defect, *SIAM Conference on Computational Science and Engineering*, March 2-6, Florida, 2009.
105. Numerical Schemes of Wave Scattering for Periodic Structure, *Colloquia, Center for Education and Research in Optical Sciences and Application*, Delaware State University, Feb 11, 2009. (Invited Talk)
106. The Determination of the Support and Surface Conductivity of a Partially Coated Buried Object, *SIAM Annual Meeting*, July 7-11, San Diego, 2008.
107. Inverse Scattering Using Finite Elements and Gap Reciprocity, *SIAM Conference on Imaging Science*, July 7-9, San Diego, 2008.
108. DG Method for Generalized Eigen-oscillations of Complex Helmholtz Equations, *The 6th International Conference on Differential Equations*, May 2008, Baltimore, USA.
109. Inverse Scattering Theory for MIMO Radar with applications in Wall Penetration, *Delaware EPSCoR Fall 2007 Research Forum*, Delaware Biotechnology Institute, Nov. 2007.

110. Discontinuous Galerkin Method for complex Helmholtz eigenproblems, *Finite Element Circus*, Cornell University, Oct. 2007.
111. A spectral method for complex Helmholtz equations using generalized Eigen-oscillations, UNC Charlotte, Apr. 2007. (Invited Talk)
112. An Inverse Scattering Problem for a Perfect Conductor Partially Coated by Dielectric, *Applied Mathematics Workshop*, Delaware State University. Aug. 2006.
113. Partition of Unity Finite Element Method Implementation for Poisson Equation. *Finite Element Circus*, Rutgers University, Oct. 2005.
114. Learning from Student Feedbacks, *Annual Conference for Graduate Teaching Assistants*, University of Delaware, Aug. 2005.
115. An Algebraic Multigrid Method of Micromagnetism Model on Non-uniform Grids. *1005th AMS Meeting*, University of Delaware, Apr. 2005
116. An eddy current and micromagnetism model with applications to disk write heads. *Conference on PDEs and Applications*, University of Notre Dame, Aug. 2003.

COMPUTER SKILLS

- Matlab, C, C++, Fortran, Java.
- Parallel Programming, Networking Programming, System Programming.

INDUSTRIAL WORKING EXPERIENCE

Hanyikein Computer Technology Inc., Beijing, China

Software Engineer

1996 - 1997

Developing Computer Fonts Software by C++.

Global View Inc., Beijing, China

Project Manager, Senior Engineer

1998 - 1999

Developing drivers for high speed Ethernet cards, Developing Compression Software for electric dictionary, Leading a team working on operating systems for Palm PC.

Computer Center, University of Delaware, Newark, DE USA

Software Engineer (Internship)

Summer 2000

Developing university web-pages by JSP(Java Server Page).