

QIAN ZHANG

✉ qzhang15@mtu.edu · ☎ (+001) (906)487-3542 · 📍 208 Fisher Hall

🏛️ POSITIONS AND EMPLOYMENT

Assistant Professor, Mathematical Sciences, Michigan Technological University Aug. 2021 –

🎓 EDUCATION

Wayne State University (WSU), Detroit, MI, USA Sep. 2018 – Aug. 2021

Ph.D. in Applied Mathematics

- Advisor: Prof. Zhimin Zhang
- Dissertation title: New Conforming Finite Elements Based on de Rham Complexes for Some Fourth-order Equations

Beijing Computational Science Research Center (CSRC), Beijing, China Sep. 2015 – Jun. 2018

M.Sc. in Computational Mathematics

- Advisor: Prof. Zhimin Zhang
- Dissertation title: Numerical simulations for the quad-curl problem

Jilin University, Changchun, China Sep. 2011 – Jun. 2015

B.Sc. in Computational Mathematics

- Dissertation title: A weak Galerkin finite element method for second-order elliptic problems with Robin boundary conditions

📄 RESEARCH INTERESTS

- The Finite Elements Methods
- Finite Element Exterior Calculus
- Numerical Methods for High-order Problems
- The Quad-curl Problem

📖 PUBLICATIONS AND PREPRINTS

1. J. Hu, K. Hu, and **Q. Zhang**, *Partially discontinuous nodal finite elements for $H(\text{curl})$ and $H(\text{div})$* .
2. K. Hu, **Q. Zhang**, J. Han, L. Wang, and Z. Zhang, *Spurious solutions for high order curl problems*.
3. K. Hu, **Q. Zhang**, and Z. Zhang, *A family of finite element Stokes complexes in three dimensions*, submitted to SIAM J. Numer. Anal., will be accepted after minor revision. [arXiv:2008.03793](https://arxiv.org/abs/2008.03793).
4. **Q. Zhang** and Z. Zhang, *Three families of grad-div-conforming finite elements*, submitted to Numer. Math., [arXiv:2007.10856](https://arxiv.org/abs/2007.10856).
5. L. Wang, **Q. Zhang**, J. Sun, and Z. Zhang, *A priori and a posteriori error estimations of the quad-curl eigenvalue problem*, [arXiv:2007.01330](https://arxiv.org/abs/2007.01330).
6. K. Hu, **Q. Zhang**, and Z. Zhang, *Simple curl-curl-conforming finite elements in two dimensions*, accepted for publication by SIAM J. Sci. Comput., SIAM J. Sci. Comput., Vol. 42, No. 6, 2020, A3859–A3877.:[link](#).

7. **Q. Zhang** and Z. Zhang, *Curl-curl conforming elements on tetrahedra*, CSIAM Trans. Appl. Math., Vol. 41, No. 3, 2019, A1527–A1547.:[link](#).
8. **Q. Zhang**, L. Wang, and Z. Zhang, *$H(\text{curl}^2)$ -conforming finite elements in 2 dimensions and applications to the quad-curl problem*, SIAM J. Sci. Comput., Vol. 41, No. 3, 2019, A1527–A1547.:[link](#).
9. L. Wang, **Q. Zhang**, and Z. Zhang, *Superconvergence analysis for arbitrary order rectangular and cubic edge elements for time-harmonic Maxwell's equation*, J. Sci. Comput., Vol. 78, No. 2, 2019, 1207–1230.:[link](#).
10. J. Sun, **Q. Zhang**, and Z. Zhang, *A curl-conforming weak Galerkin method for the quad-curl problem*, BIT Numer. Math., Vol. 59, 2019, 1093–1114.:[link](#).
11. **Q. Zhang**, J. Zhang, S. Jiang, and Z. Zhang, *Numerical solution to a linearized time fractional KdV equation on unbounded domains*, Math. Comp., Vol. 87, No. 310, 2018, 693–719.:[link](#).
12. S. Jiang, J. Zhang, **Q. Zhang**, and Z. Zhang, *Fast evaluation of the Caputo fractional derivative and its applications to fractional diffusion equations*, Commun. Comput. Phys., Vol. 21, No. 3, 2017, 650–678.:[link](#). Citation: 142.
13. **Q. Zhang** and R. Zhang, *A weak Galerkin mixed finite element method for second-order elliptic equations*, J. Comput. Math., Vol. 34, No. 5, 2016, 532–548.:[link](#).

HONORS AND AWARDS

Outstanding Graduate Student	Department of Mathematics, WSU, Apr. 2021
Thomas C. Rumble University Graduate Fellowships	Graduate School, WSU, 2020 – 2021
M.F. Janowitz Endowed Mathematics Scholarship	Graduate School, WSU, Apr. 2020
Outstanding Youth Paper Prize	Beijing Society of Computational Mathematics, Sep. 2017
Graduate Scholarship	CSRC, Jun. 2017
Best Performance Award for Graduate Students	CSRC, Aug. 2016

ACADEMIC ACTIVITIES

- The 50th Anniversary Finite Element Circus Meeting**, Online Nov. 2020
Presentation Title: A family of simple finite element complexes on tetrahedral meshes.
- The 10th Annual Graduate and Postdoctoral Research Symposium**, WSU Mar. 2020
Poster Presentation Title: A curl-curl-conforming element in 2D and its applications to quad-curl problems.
- 2019 Spring Finite Element Circus**, West Lafayette, IN 47907, USA Apr. 2019
Presentation Title: A curl-curl-conforming element on a cube and its superconvergence property.
- The 2nd Annual Conference on Computational Mathematics in Beijing-Tianjin-Hebei Region**,
Tianjin, China Sep. 2017
Presentation Title: Fast evaluation of the Caputo fractional derivative and its applications to some time-fractional equations (paper prize talk).
- The 10th International Conference on Computational Physics**, Macao, China Jan. 2017
- The 20th IMACS World Congress**, Xiamen, China Dec. 2016
Presentation Title: Numerical solution to a linearized time-fractional KdV equation on unbounded domains.

TEACHING EXPERIENCE

MA 5510: Ordinary Differential Equations

Fall 2021

MA 3530: Introduction to Ordinary Differential Equations

Fall 2021

MAT 2030: Calculus III

Spring/Summer 2021, WSU

MAT 1050: Intermediate Algebra with Trigonometry

Winter 2020, WSU

MAT 1800: Precalculus

Fall 2019, WSU