Curriculum Vitae

Jiguang Sun

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Appointments

Henes Endowed Professor	Math. Sci. MTU	2024 –
Department Chair	Dept. of Math. Sci. MTU	2021 – 2024
Director	Center for Applied Math. and Stat. MTU	2021 –
Interim Department Chair	Dept. of Math. Sci. MTU	2020 – 2021
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

Research Interests

Linear and Nonlinear Eigenvalue Problems
Data Driven Methods for Inverse Problems
Numerical Methods for Partial Differential Equations
Electromagnetic Methods for Geophysics

Academic Visits

Associate Member	Beijing Computational Science Research Center	2018.7 – 2020.1.
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

Editorial Services

- **Editorial Board Member**, Inverse Problems, IOP, 2021 -
- **Associate Editor**, Results in Applied Mathematics, Elsevier, 2018 -
- **Associate Editor**, Applicable Analysis, Taylor & Francis, 2016 -
- **International Advisory Panel Member**, Inverse Problems, IOP, 2019 - 2021.
- **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.

Grants

- **PI**, Novel Finite Element Methods for Nonlinear Eigenvalue Problems - A Holomorphic Operator Function Approach, NSF 2109949, 2023-2026.
- **PI**, Novel Finite Element Methods for Eigenvalue Problems, Mathematics and Physical Sciences Collaboration Grants for Mathematicians, Simons Foundation, 711922, 2020 - 2025.
- **PI**, Spectral Indicator Method for Eigenvalue Problems and its Applications in Data Sciences, Research Excellence Fund (REF), Scholarship and Creativity Grant (SCG), Michigan Tech. 2019-2020.
- **PI**, International Conf. on Computational Mathematics and Inverse Problems, NSF DMS-1632364, 2016.
- **Co-PI**, IMA PI Graduate Conf., Institute for Mathematics and its Applications (IMA), Aug.10-14, 2016.
- **PI**, Finite Element Methods for High Order Eigenvalue Problems, NSF, 1521555, 2015 -2018.
- **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, FEM for Eigenvalue Problems, MTU 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 (Citations: Google Scholar - 2483. MathSciNet - 1274 as of 01/10/2024)

Book/Edited Book/Edited Special Issue

1. Finite Element Methods for Eigenvalue Problems, J. Sun and A. Zhou, CRC Press, 2016.
2. Discrete and Computational Mathematics (co-editor), Nova Science Publisher Inc., 2008.
3. Special Issue: Scattering and Inverse Scattering Problems (co-editor), Applicable Analysis 96(1), 2017.
4. Special Issue: Computational Mathematics and Inverse Problems (co-editor), Computers & Mathematics with Applications, 74(11), 2017.

Journal Papers

1. Y. Xi, B. Gong, and J. Sun, *Analysis of a finite element DtN method for scattering resonances of sound hard obstacles.* submitted. 2024. arXiv:2404.09300
2. Y. Xi and J. Sun, *Parallel multi-step spectral indicator method for nonlinear eigenvalue problems.* submitted. 2023. arXiv:2312.13117
3. K. Hu, J. Sun, and Q. Zhang, *Quadratic and cubic Lagrange finite elements for mixed Laplace eigenvalue problems on criss-cross meshes.* submitted, 2023.
4. C. Wang, J. Cui, and J. Sun, *Error estimates for a mixed finite element method for the Maxwell's transmission eigenvalue problem.* submitted, 2023.
5. V. Hughes, I. Harris, and J. Sun, *The anisotropic interior transmission eigenvalue problem with a conductive boundary.* submitted, 2023.
6. Y. Xi, J. Lin, and J. Sun, *A finite element contour integral method for computing the resonances of metallic grating structures with subwavelength holes.* submitted, 2023.

7. Z. Chen, J. Sun, and J. Xia, *A robust randomized indicator method for fast and accurate symmetric eigenvalue solution.* submitted, 2023.
8. Y. Lin, X. Yan, J. Sun and J. Liu, *Deep neural network-oriented indicator method for inverse scattering problems using partial data.* Mathematics 2024, 12(4), 522. https://doi.org/10.3390/math12040522
9. H. Du, Z. Li, J. Liu, Y. Liu and J. Sun, *Divide-and-conquer DNN approach for the inverse point source problem using a few single frequency measurements.* Inverse Problems, 39, no. 11, 115006, 2023.
10. Y. Ma and J. Sun, *Computation of Scattering Poles using Boundary Integrals.* Appl. Math. Lett., 146, 108792, 2023.
11. Y. Liu, Z. Wu, J. Sun and Z. Zhang, *Deterministic-statistical approach for an inverse acoustic source problem using multiple frequency limited aperture data.* Inverse Probl. Imaging, 13, no. 6, 1329-1345, 2023.
12. Y. Ma and J. Sun, *Fourier-Galerkin method for the transmission eigenvalue problem based on a boundary integral formulation.* Journal of Scientific Computing 95 (2), 60, 2023.
13. J. Liu, Y. Liu, and J. Sun, *Reconstruction of modified transmission eigenvalues using Cauchy data.* Journal of Inverse and Ill-posed Problems, online, 2023. https://doi.org/10.1515/jiip-2022-0014
14. W. Xiao, B. Gong, J. Lin, and J. Sun, *Band Structure Calculations of Dispersive Photonic Crystals in 3D using Holomorphic Operator Functions.* Communications in Computational Physics 33 (2), 628, 2023.
15. B. Gong, J. Sun, T. Turner, and C. Zheng, *Finite element approximation of transmission eigenvalues for anisotropic media.* Math. Comp. 91, no. 338, 2517-2537, 2022.
16. J. Sun, *Local estimators and Bayesian inverse problems with non-unique solutions.* Appl. Math. Lett. 132, 108149, 2022.
17. Y. Ma and J. Sun, *Integral Equation Method for a Non-Selfadjoint Steklov Eigenvalue Problem.* Commun. Comput. Phys. 31, no. 5, 1546-1560, 2022.
18. L. Wang, Q. Zhang, J. Sun, and Z. Zhang, *A priori and a posteriori error estimates for the quad-curl eigenvalue problem.* ESAIM Math. Model. Numer. Anal. 56, no. 3, 1027-1051. 2022.
19. X. Pang, J. Sun, and Z. Zhang, *FE-Holomorphic operator function method for nonlinear plate vibrations with elastically added masses.* J. Comput. Appl. Math. 410, Paper No. 114156, 2022.
20. B. Gong, J. Sun, and X. Wu, *Finite Element Approximation of the Modified Maxwell's Stekloff Eigenvalues.* SIAM J. Numer. Anal., Vol. 59, No. 5, 2430-2448, 2021.
21. Y. Liu and J. Sun, *Bayesian inversion for an inverse spectral problem of transmission eigenvalues.* Res. Math. Sci. 29(8):53, https://doi.org/10.1007/s40687-021-00288-x, 2021.
22. Y. Liu, Y. Guo and J. Sun, *A deterministic-statistical approach to reconstruct moving sources using sparse partial data.* Inverse Problems, 37(6), Paper no. 065005, 2021.
23. Z. Li, J. Sun, L. Xu, *An extended sampling-ensemble Kalman filter approach for partial data inverse elastic problems.* Inverse Probl. Sci. Eng., https://doi.org/10.1080/17415985.2021.1936515, 2021.
24. W. Xiao and J. Sun, *Band structure calculation of photonic crystals with frequency-dependent permittivities.* J. Opt. Soc. Am. A 38(5), 628-633, 2021.
25. W. Xiao, B. Gong, J. Sun and Z. Zhang, *Finite element calculation of photonic band structures for frequency dependent materials.* J. Sci. Comput. 87 (1), 1-16, 2021.
26. Z. Li, Y. Liu, J. Sun and L. Xu, *Quality-Bayesian approach to inverse acoustic source problems with partial data.* SIAM J. Sci. Comput. 43 (2), A1062-A1080, 2021.
27. R. Huang, J. Sun and C. Yang, *A multilevel memory-efficient spectral indicator method*, CSIAM Trans. Appl. Math. 1(3), 463-477, 2020.
28. W. Xiao, B. Gong, J. Sun, Z. Zhang, *A new finite element approach for the Dirichlet eigenvalue problem.* Appl. Math. Lett. 105, 106295, https://doi.org/10.1016/j.aml.2020.106295, 2020.
29. Z. Li, Z. Deng, and J. Sun, *Extended-sampling-Bayesian method for limited aperture inverse scattering problems*, SIAM J. Imaging Sci., 13(1), 422-444, 2020.
30. A. Alzaalig, G. Hu, X. Liu, and J. Sun, *Fast acoustic source imaging using multi-frequency sparse data*, Inverse Problems 36(2), 025009, 2020.
31. X. Ji, J. Sun and P. Li, *Conforming finite element methods for elasticity transmission eigenvalues*, Results in Applied Mathematics 5, https://doi.org/10.1016/j.rinam.2019.100083, 2020.

32. B. Gong, J. Han, J. Sun, and Z. Zhang, *A shifted-inverse adaptive multigrid method for the elastic eigenvalue problem*, Commun. Comput. Phys. 27(1), 251-273, 2020.

33. S. Dominguez, N. Nigam, and J. Sun, *Revisiting the Jones eigenproblem in fluid-structure interaction*, SIAM J. Appl. Math. 79(6), 2385-2408, 2019.

34. J. Liu, X. Liu, and J. Sun, *Extended sampling method for inverse elastic scattering problems using one incident wave*, SIAM J. Imaging Sci. 12(2), 874-892, 2019.

35. J. Liu, Y. Liu, and J. Sun, *An inverse medium problem using Stekloff eigenvalues and a Bayesian approach*, Inverse Problems 39(9), 094004, 2019.

36. J. Sun, Q. Zhang, and Z. Zhang, *Curl-conforming weak Garlerkin method for the quad-curl problem*, BIT Numerical Mathematics 59(4), 1093-1114, 2019.

37. X. Liu and J. Sun, *Data recovery in inverse scattering: from limited-aperture to full-aperture*, J. Comput. Phys. 386, 350-364, 2019.

38. J. Liu, J. Sun, and T. Turner, *Spectral indicator methods for the non-selfadjoint Steklov eigenvalue problem*, J. Sci. Comput. 79(3), 1814-1831, 2019.

39. K. Wang, J. Sun and Z. Zeng, *Through wall detection of moving human beings using UWB radar*, IEEE Geoscience and Remote Sensing Letters, Vol. 15, Iss. 5, 717-721, 2019.

40. R. Huang, J. Sun and C. Yang, *Recursive integral method with Cayley transformation*, Numer. Linear Algebra Appl. 25(6), DOI:10.1002/nla.2199, 2018.

41. G. Bao, G. Hu, J. Sun and T. Yin, *Direct and inverse elastic scattering from anisotropic media*, Journal des Mathématiques Pures et Appliquées 117, 263-301, 2018.

42. J. Liu and J. Sun, *Extended sampling method for inverse scattering problems*, Inverse Problems 34, 085007, 2018.

43. R. Zhang and J. Sun, *The reconstruction of obstacles in a waveguide using finite elements*, J. Comput. Math. 36(1), 29-46, 2018.

44. R. Zhang, J. Sun, and C. Zheng, *Reconstruction of a penetrable obstacle in non-planar waveguides*, Comput. Math. Appl. 74(11), 2739-2751, 2017.

45. S. Brenner, J. Sun, and L.Y. Sung, *Hodge decomposition methods for a quad-curl problem on planar domains*, J. Sci. Comput. 73(2-3), 495-513, 2017.

46. F. Zeng, X. Liu, J. Sun and L. Xu, *Reciprocity gap method for an interior inverse scattering problem*, J. Inverse Ill-Posed Probl. 25(1), 57-68, 2017.

47. R. Huang, A. Struthers, J. Sun, and R. Zhang, *Recursive integral method for transmission eigenvalues*, J. Comput. Phys. 327, 830-840, 2016.

48. F. Zeng, X. Liu, J. Sun and L. Xu, *The reciprocity gap method for a cavity in an inhomogeneous medium*, Inverse Probl. Imaging 10(3), 855-868, 2016.

49. F. Zeng, J. Sun and L. Xu, *A spectral projection method for transmission eigenvalue problem*, Sci. China Math. 59(8), 1613-1622, 2016.

50. X. Ji, H. Geng, J. Sun and L. Xu, *C^0IPG for a fourth order eigenvalue problem*, Commun. Comput. Phys. 19(2), 393-410, 2016.

51. H. Geng, X. Ji, J. Sun and L. Xu, *C^0IPG method for the transmission eigenvalue problem*, J. Sci. Comput. 68(1), 326-338, 2016.

52. J. Sun, *A mixed finite element for the quad-curl eigenvalue problem*, Numerische Mathematik 132(1), 185-200, 2016.

53. S. Brenner, P. Monk and J. Sun, *C^0IPG for the biharmonic eigenvalue problem*, Spectral and High Order Methods for Partial Differential Equations, Lect. Notes Comput. Sci. Eng. 106, 3-15, 2015.

54. R. Zhang and J. Sun, *An efficient finite element method for grating profile reconstruction*, J. Comput. Phys. 302, 405-419, 2015.

55. F. Zeng, T. Turner, and J. Sun, *Some results on electromagnetic transmission eigenvalues*, Math. Methods Appl. Sci. 38(1), 155-163, 2015.

56. F. Cakoni, P. Monk and J. Sun, *Error analysis of the finite element approximation of transmission eigenvalues*, Comput. Methods Appl. Math. 14(4), 419-427, 2014.

57. X. Ji, J. Sun, and Y. Yang, *Optimal penalty parameter for C^0 IPDG*, Applied Mathematics Letters, 37(2014), 112-117.

58. X. Liu and J. Sun, *Reconstruction of Neumann eigenvalues and the support of a sound hard obstacle*, Inverse Problems, 30(6), 065011, 2014.

59. I. Harris, F. Cakoni and J. Sun, *Transmission eigenvalues and non-destructive testing of anisotropic magnetic materials with voids*, Inverse Problems 30(3), 035016, 2014.

60. X. Ji, J. Sun, and H. Xie, *A Multigrid Method for Helmholtz Transmission Eigenvalue Problem*, J. Sci. Comput. 60(3), 276-294, 2014.

61. X. Ji and J. Sun, *A multilevel finite element methods for transmission eigenvalues of anisotropic media*, J. Comput. Phys. 255, 422-435, 2013.

62. J. Sun and L. Xu, *Computation of Maxwell's transmission eigenvalues and its applications in inverse medium problems*, Inverse Problems 29(10), 104013, 2013.

63. F. Zeng, P. Suarez, and J. Sun, *A decomposition method for an interior inverse scattering problem*, Inverse Probl. Imaging 7(1), 291-303, 2013.

64. J. Sun and C. Zheng, *Reconstruction of obstacles embedded in waveguides*, Contemp. Math. 586, 341-350, 2013.

65. 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 9(6), 1079-1083, 2012.

66. P. Monk and J. Sun, *Finite element methods of Maxwell transmission eigenvalues*, SIAM J. Sci. Comput. 34(3), B247-B264, 2012.

67. X. Ji, J. Sun and T. Turner, *A mixed finite element method for Helmholtz Transmission eigenvalues*, ACM Trans. Math. Software 38(4), Algorithm 922, 2012.

68. J. Sun, *An eigenvalue method using multiple frequency data for inverse scattering problems*, Inverse Problems 28(2), 025012, 2012.

69. J. Sun, *A new family of high regularity elements*, Numer. Methods Partial Differential Equations 28(1), 1-16, 2012.

70. F. Cakoni, M. Di Cristo and J. Sun, *A multistep reciprocity gap functional method for imaging of buried objects in layered medium*, Complex Var. Elliptic Equ. 57(2-4), 261-176, 2012.

71. F. Zeng, F. Cakoni and J. Sun, *An inverse electromagnetic scattering problem for cavity*, Inverse Problems 27(12), 125002, 2011.

72. J. Sun, *Iterative method for transmission eigenvalues*, SIAM J. Numer. Anal. 49(5), 1860-1874, 2011.

73. C. Bacuta, J. Sun and C. Zheng, *Partition of unity refinement*, Numer. Methods Partial Differential Equations 27(4), 803-817, 2011.

74. G. Hsiao, F. Liu, J. Sun and L. Xu, *A coupled BEM and FEM for the interior transmission problem*, J. Comput. Appl. Math. 235(17), 5213-5221, 2011.

75. J. Sun, *Estimation of the transmission eigenvalue and the index of refraction using Cauchy data*, Inverse Problems 27(1), 015009, 2011.

76. F. Cakoni, D. Colton, P. Monk and J. Sun, *The inverse electromagnetic scattering problem for anisotropic media*, Inverse Problems 26(7), 074004, 2010.

77. D. Colton, P. Monk and J. Sun, *Analytical and computational methods for transmission eigenvalues*, Inverse Problems 26(4), 045011, 2010.

78. 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 26(1), 156 -162, 2009.

79. M. Ehrhardt, J. Sun, and C. Zheng, *Evaluation of scattering operators for semi-infinite periodic arrays*, Commun. Math. Sci. 7(2), 347-364, 2009.

80. Z. Zeng, F. Wu, L. Huang, F. Liu, and J. Sun, *The adaptive chirplet transform and its application in GPR target detection*, Applied Geophysics 6(2),192-200, 2009.

81. 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*,J. Comput. Phys. 227, 9933-9954, 2008.

82. 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, 6(3), 167-172, 2008.
83. P. Monk and J. Sun, *Inverse scattering using finite elements and gap reciprocity*, Inverse Probl. Imaging 1(4), 643-660, 2007.
84. M. Di Cristo and J. Sun, *The Determination of the Support and Surface Conductivity of a Partially Coated Buried Object*, Inverse Problems 23(3), 1161-1179, 2007.
85. P. Monk and J. Sun, *Analysis of an eddy current and micromagnetic model*, Appl. Anal. 85(12), 1509-1525, 2006.
86. M. Di Cristo and J. Sun, *An inverse scattering problem for a partially coated buried obstacle*, Inverse Problems 22(6), 2331-2350, 2006.
87. J. Sun and P. Monk, *An adaptive algebraic multigrid algorithm for micromagnetism*, IEEE Transaction on Magnetics 42(6), 1643 - 1647, 2006.
88. J. Sun, F. Collino, P. Monk and L. Wang, *An eddy-current and micromagnetism model with applications to disk write heads*, Internat. J. Numer. Methods Engrg. 60(10), 1673-1698, 2004.

Conference Papers

89. 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.
90. 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.
91. 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.
92. 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.
93. 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.
94. C. Bacuta and J. Sun, *Notes on the Schwarz Alternating Method for Partition of Unity FEM*, DCDIS A Supplement, 2009, 15 - 21.
95. 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.
96. Z. Zeng, F. Liu, J. Sun, and C. Liu, *Multiple Frequency Electromagnetic Response of the Dispersive Layer*, SAGEEP, 21(2008), 204-208.
97. 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.
98. 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.
99. 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.
100. 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, MTU, 2019.
- **Outstanding Research Award**, senior level, Department of Mathematical Sciences, MTU, 2016.
- **Kliakhandler Fellow**, Department of Mathematical Sciences, MTU, 2015.
- **Outstanding Faculty Services Award**, Department of Mathematical Sciences, MTU, 2014.
- **Travel Award**, Structure Preserving Discretization of Partial Differential Equations, IMA, Oct. 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, MTU, 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, Jan. 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**, 3rd Class, Tsinghua University, 1993-1994, 1994-1995, 1995-1996.

Postdocs/Graduate Students

Postdocs/Visiting Scholars

1. Juan Liu, 2017-2018. (Currently Associate Professor at Jinan University, China.)
2. Ruming Zhang, 2014-2015. (Currently Associate Fellow at KIT, Germany.)

Ph.D. Students

1. Yanfang Liu, 2021. PostDoc, Oak Ridge National Laboratory, U.S.A.
2. Wenqiang Xiao, 2021. Assistant Professor, Inner Mongolia University, China.
3. Zhaoxing Li, 2021. Assistant Professor, Hebei University of Technology, China.
4. Ruihao Huang, 2019. Researcher and Reviewer, FDA, U.S.A.
5. Ala Alzaalig, 2017. Faculty Member, Higher Colleges of Technology, United Arab Emirates.
6. Tiara Turner, 2013. Associate Professor, University of Maryland Eastern Shore, U.S.A.
7. Fang Zeng, 2013. Associate Professor, Chongqing University, China.

Visiting Ph.D. Students

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

M.S. Students

1. Chloe McCarthy, MTU, 2023.
2. Peter Solfest, MTU, 2014.
3. Nathasha Weerasinghe, MTU, 2014.
4. Joe Welch, M.S., Delaware State University, 2008.
5. Ashanti Pitts, M.S., Delaware State University, 2007.

Undergraduate Students

1. Nat Anderson, MTU, 2022.
2. Chloe McCarthy, MTU, 2021.

University Services

1. Department Chair, Department of Mathematical Sciences, MTU, 2021-.
2. Interim Department Chair, Department of Mathematical Sciences, MTU, 2020-2021.
3. Advisory Committee Chair, Department of Mathematical Sciences, MTU, 2019-2020.
4. Reviewer, Summer Undergraduate Research Fellowship Program, MTU, Feb. 2018.
5. Member, Dean's Searching Committee, College of Art and Sciences, MTU, 2017-2018.
6. External advocate, Early Career Management (ECM) Committee, MTU, 2017-2018.
7. Reviewer, Research Excellence Fund Proposals, Michigan Technological University, 2017.
8. Reviewer, Research Excellence Fund Proposals, Michigan Technological University, 2015.
9. Faculty Judge, Graduate Research Colloquium, Michigan Technological University, Feb. 2014.
10. Member, Advisory Committee, Department of Mathematical Sciences, MTU, 2013-2017.
11. Director of Graduate Program, Department of Mathematical Sciences, MTU, 2013-2017.
12. Member, Graduate Committee, Department of Mathematical Sciences, MTU, 2012-2013.
13. Member, Hiring Committee, Department of Mathematical Sciences, MTU, 2012-2013.
14. Member, University Strategic Implementation Plan Committee, DSU, 2011 - 2012.
15. Member, Integration Committee, College of Mathematics, Natural Sciences and Technology, DSU, 2010-2011
16. Member, Scheduling Committee, Mathematical Sciences, Delaware State University, 2010-2011, 2011-2012
17. Chair, Website Committee, Mathematical Sciences, DSU, 2009-2010, 2010-2011, 2011-2012.
18. Member, Committee of Graduate Curriculum and Admission, Math. Sci., DSU, 2009-2010, 2010-2011.
19. Faculty Senator, Department of Applied Mathematics and Theoretical Physics, DSU, 2008-2009.
20. Chair, Student Committee, Department of Applied Mathematics and Theoretical Physics, DSU, 2007-2008.
21. Member, Safety Committee,College of Mathematics, Natural Sciences, and Technology, DSU, 2007-2008.
22. Member, By-Law Committee, Department of Applied Mathematics and Theoretical Physics, DSU, 2007-2008.
23. Member, Curriculum Committee, Dept.of Applied Mathematics and Theoretical Physics, DSU, 2007-2009.
24. Member, Administration Committee, Dept. of Applied Math. and Theoretical Physics, DSU, 2007-2009.
25. Member, Strategic Planning Committee, Dept. of Applied Mathematics and Theoretical Physics, DSU, 2007.

Professional Services

- **External Evaluator** for Undergraduate Programs, Department of Mathematics, UMass Dartmouth, March, 2024.
- **Co-organizer**, Mini-symposium on PDE Eigenvalue Problems: Computational Modeling and Numerical Analysis, ICIAM, Tokyo, 2023.
- **Organizer**, Mini-workshop on Applied Mathematics, Center for Applied Mathematics and Statistics, Michigan Technological University, June 29, 2023.
- **Co-organizer**, The Copper Country Workshop on Applied Mathematics, Statistics, and Data Sciences, Michigan Technological University, July 5th – July 7th, 2022.
- **Faculty Judge**, Graduate Research Colloquium, Spring, 2021.
- **Reviewer**, Research Excellence Fund, Michigan Technological University, 2018.
- **Co-organizer**, Mini-symposium on Mathematical Aspects of Computational Eletromagnetics, 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.
- **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. DNN-oriented indicator method for inverse scattering problems using partial data, AMS Spring Eastern Sectional Meeting, Howard University, Apr. 6-7, 2024. (Invited Mini-symposium Talk)
2. Computational Methods for Scattering Resonances, the 6th SIAM Texas-Louisiana Sectional Meeting (SIAM TX-LA 2023), University of Louisiana at Lafayette, Nov. 3-5. 2023. (Invited Mini-symposium Talk)
3. Computation of Scattering Poles, Finite Element Circus, University of Notre Dame, Oct 20-21. 2023. (Contributed Talk)
4. Deterministic-Statistical Approach for Inverse Problems with Partial Data, Theoretical and Computational Progress on PDE-based Inverse Problems with Applications, ICIAM, Tokyo, Aug. 23, 2023. (Invited Mini-symposium Talk)
5. Computation of Nonlinear Eigenvalue Problems for Holomorphic Operator Functions, Conference on Analysis and Computation of PDE Eigenvalue Problems, Tianyuan Northeast Center, Jilin University, June 10-11, 2023. (Invited Talk)
6. Divide-and-conquer DNN approach for the inverse point source problem using a few single frequency measurements, Online Workshop on Machine Learning and Inverse Problems, Beijing Normal University, Aug.12-13, 2023. (Invited Talk)
7. Deterministic-Statistical Approach for Inverse Problems with Partial Data, Numerical Analysis Seminar, The University of Hong Kong, May. 3, 2023. (Invited Seminar Talk)
8. Deterministic-Statistical Approach for Inverse Problems with Partial Data, Purdue University, Apr. 7, 2023. (Invited Seminar Talk)
9. Finite Element/Holomorphic Operator Function Approach for Band Structure Calculations of Dispersive Photonic Crystals in 3D, Finite Element Circus, Bridgewater State University, March 17-18, 2023.
10. Deterministic-Statistical Approach for Inverse Problems with Partial Data, Annual Conference of Guangdong Society of Computational Mathematics, Dec. 17-18, 2022. (Invited Seminar Talk)
11. Deterministic-Statistical Approach for Inverse problems with Partial Data, Xi'an Jiaotong University, Nov. 14, 2022. (Invited Seminar Talk)
12. Regular Convergence and Finite Element Methods for Eigenproblems, Chinese Academy of Sciences, Beijing, China, Nov 2, 2022. (Invited Seminar Talk)
13. Deterministic-Statistical Approach for Inverse problems with Partial Data, New Ideas in Computational Inverse Problems, BIRS, Canada, Oct. 23-28, 2022. (Invited Talk)
14. Finite Element/Holomorphic Operator Function Approach for Nonlinear Eigenvalue Problems, University of Notre Dame, Oct. 24, 2022. (Invited Seminar Talk)

15. Through-Wall Detection of the Moving Paths and Vital Signs of Human Beings, SIAM Annual Conference, Pittsburgh, July 11-15, 2022. (Invited Mini-symposium Talk)

16. Regular Convergence and FEM for Eigenproblems, Copper Country Workshop on Applied Mathematics, Statistics, and Data Sciences, Michigan Tech, USA. July 5-7, 2022. (Contributed Talk)

17. A holomorphic operator function approach to approximate nonlinear eigenvalue problems, ESCO, June 13-17, 2022. (Invited Mini-symposium Talk)

18. Regular Convergence and FEM for Eigenproblems, University of Electronic Science and Technology of China, Jun. 1, 2022. (Invited Talk)

19. A Deterministic-Statistical Approach for Moving Sources with Sparse Partial Data, Southern Methodist University, Apr. 28, 2022. (Invited Seminar Talk)

20. Bayesian Inversion and Non-unique Solutions, AMS Spring Central Sectional Meeting, Mar. 26-27, 2022. (Invited Mini-symposium Talk)

21. Regular Convergence and FEM for Eigenproblems, Workshop on Computational and Applied Mathematics, CSRC, Beijing, May 28-29, 2022. (Invited Talk)

22. Local estimators and Bayesian inverse problems with non-unique solutions, Middle West Numerical Analysis Day, University of Michigan, Ann Arbor, May 20-21, 2022. (Contributed Talk)

23. FE/Holomorphic Operator Function Approach for Nonlinear Eigenvalue Problems, Workshon on Multi-physics, CSRC, Beijing, Apr. 27, 2022. (Invited Talk)

24. FE/Holomorphic Operator Function Approach for Nonlinear Eigenvalue Problems, Wayne State University, Apr. 18, 2022. (Invited Talk)

25. Finite Element/Holomorphic Operator Function Approach for Nonlinear Eigenvalue Problems, The Hong Kong Polytechnic University, Apr. 7, 2022. (Invited Seminar Talk)

26. Finite Element/Holomorphic Operator Function Approach for Nonlinear Eigenvalue Problems, The George Washington University, Nov. 19, 2021. (Invited Seminar Talk)

27. Bayesian Inversion and Non-unique Solutions, CSIAM Seminar Series, Dec. 2, 2021. (Invited Seminar Talk)

28. Regular Convergence and FEM for Eigenproblems, Finite Element Circus, Penn State, Nov. 5-6, 2021. (Contributed Talk)

29. A Deterministic-Statistical Approach for Moving Sources with Sparse Partial Data, Chinese Academy of Sciences, Oct. 29, 2021. (Invited Seminar Talk)

30. Finite Element/Holomorphic Operator Function Approach for Nonlinear Eigenvalue Problems, Shanghai Jiao Tong University, Oct. 19, 2021. (Invited Seminar Talk)

31. Bayesian Method for Inverse Problems - a deterministic-statistic approach using partial data, Iowa State University Oct. 11, 2021. (Invited Seminar Talk)

32. Finite Element/Holomorphic Operator Function Approach for Nonlinear Eigenvalue Problems, The 44th SIAM Southeastern Atlantic Section Conference, Auburn University, September 18-19, 2021. (Invited Talk)

33. Functional Analysis of Discretization Methods, Talk Series, Harbin Institute of Technology, June 2021. (4 Invited Talks)

34. Finite Element/Holomorphic Operator Function Approach for Nonlinear Eigenvalue Problems, Southwestern University of Finance and Economics, June 10, 2021. (Invited Seminar Talk)

35. Finite Element/Holomorphic Operator Function Approach for Nonlinear Eigenvalue Problems, Workshop on Numerical PDEs and Applications, Taiyuan University of Technology, May 29, 2021. (Invited Talk)

36. Finite Element/Holomorphic Operator Function Approach for Nonlinear Eigenvalue Problems, Int. Conf. on Eigenvalue Problems and Related Topics, CSRC, May 8-9, 2021. (Invited Talk)

37. Finite Element/Holomorphic Operator Function Approach for Nonlinear Eigenvalue Problems, Beijing Institute of Technology, Apr. 30, 2021. (Invited Colloquium Talk)

38. A Deterministic-Statistical Approach for Moving Sources with Sparse Partial Data, 2021 AMS Spring Southeatern Virtual Sectional Meeting, Mar. 13-14, 2021. (Invited Mini-symposium Talk)

39. Through-Wall Detection by UWB Radar: Deterministic and Statistical Methods, Workshop on Model-Data Driven Inversions for Oil Exploration, Tianyuan Northwest Center, Dec. 19-22, 2020. (Invited Talk)

40. A holomorphic operator function approach to approximate nonlinear eigenvalue problems, Workshop on Applied Mathematics, Chinese Academy of Sciences, Dec. 11-12, 2020. (Invited Talk)

41. A New Finite Element Approach for Some Nonlinear Eigenvalue Problems, CCMA Seminar on Comp. Math. and Application, Pennsylvania State University, Dec. 3, 2020. (Invited Seminar Talk)

42. Bayesian Inversion and Inverse Problems with Non-unique Solutions, Conference on Theoretical and Computational Analysis for Inverse Problems, Heilongjiang University, Nov. 15, 2020. (Invited Talk)

43. FEM Calculation of Band Structures for Dispersive Photonic Crystals, 50th Anniversary Finite Element Circus, Nov. 6-7, 2020.

44. A New Finite Element Approach for Some Nonlinear Eigenvalue Problems, ACM Seminar, University of South Carolina, Oct. 9, 2020. (Invited Seminar Talk)

45. Quality-Bayesian Approach to Inverse Acoustic Source Problems with Partial Data, Summer Intensive Seminar on Inverse Modeling and Computation, Shanghai University of Finance and Economics and Fudan University, Aug. 3-6, 2020. (Invited Talk)

46. Extended-Sampling-Bayesian Method for Inverse Scattering Problems with Partial Data, Summer Intensive Seminar on Inverse Modeling and Computation, Shanghai University of Finance and Economics and Fudan University, Aug. 3-6, 2020. (Invited Talk)

47. Finite Element Methods for The Transmission Eigenvalue Problems, CAM Seminar, Southern University of Science and Technology, July 31, 2020. (Invited Seminar Talk)

48. A New Finite Element Approach for Some Nonlinear Eigenvalue Problems, Institute of Computational Mathematics and Scientific/Engineering Computing, Chinese Academy of Sciences, July 24, 2020. (Invited Seminar Talk)

49. A New Finite Element Approach for Transmission Eigenvalues of Anisotropic Media, Harbin Institute of Technology, July 23, 2020. (Invited Seminar Talk Series)

50. A New Finite Element Approach for Some Nonlinear Eigenvalue Problems, Harbin Institute of Technology, July 22, 2020. (Invited Seminar Talk Series)

51. Quality-Bayesian Approach to Inverse Acoustic Source Problems with Partial Data, Harbin Institute of Technology, July 21, 2020. (Invited Seminar Talk Series)

52. Bayesian Inversion and Inverse Problems with Non-unique Solutions, Harbin Institute of Technology, July 20, 2020. (Invited Seminar Talk Series)

53. Bayesian Inversion and Inverse Scattering Problems with Non-unique Solutions, Chinese Academy of Sciences, Jan 2, 2020. (Invited Seminar Talk)

54. Finite Element Approximations for Nonlinear Eigenvalue Problems, Finite Element Circus, Virginia Tech., Nov. 1-2, 2019.

55. Finite Element Approximations for Nonlinear Eigenvalue Problems, Conference on Computational Mathematics and Applications, University of Nevada, Las Vegas Oct. 25 - 27, 2019. (Invited Mini-symposium Talk)

56. A Memory Efficient Spectral Indicator Method for Eigenvalue Problems, Conference on Computational Mathematics and Applications, University of Nevada, Las Vegas Oct. 25 - 27, 2019. (Invited Mini-symposium Talk)

57. Seminar, "Through-Wall Detection of the Moving Paths and Vital Signs of Human Beings," Heilongjiang University, Harbin, China. (July 30, 2019).

58. Seminar, "Extended Sampling Method in Inverse Scattering," Harbin Institute of Technology, Harbin, China. (July 27, 2019).

59. Seminar, "Finite Element Approximations for Several New Eigenvalue Problems," Nanjing University, Nanjing, China. (July 12, 2019).

60. Seminar, "ESM-Bayesian Method for Limited Aperture Inverse Scattering Problems," Beijing Normal University, Beijing, China. (July 5, 2019).

61. Seminar, "Finite Element Approximations for Several Non-selfadjoint Eigenvalue Problems," Jinan University, Guangzhou, China. (July 1, 2019).

62. The 11th Conference on Inverse Problems, Imaging and Applications, "Through-Wall Detection of the Moving Paths and Vital Signs of Human Beings," Lanzhou University, Lanzhou, China. (June 22, 2019 - June 24, 2019).

63. The Mathematics of Finite Elements and Applications, "Finite Element Approximations for Several Non-selfadjoint Eigenvalue Problems," Brunel University, London. (June 18, 2019 - June 21, 2019).

64. Seminar, "FEM for Several New Eigenvalue Problems," Xiantan University, Hunan, China. (June 12, 2019).

65. Seminar, "FEM for Several New Eigenvalue Problems," Chinese Academy of Sciences, Beijing, China. (June 12, 2019).

66. Seminar, "Several Eigenvalue Problems in Inverse Scattering," Nanjing University of Aeronautics and Astronautics, Nanjing, China. (June 10, 2019).

67. Sixth International Conference on Interdisciplinary Applied and Computational Mathematics, "Through-Wall Detection of the Moving Paths and Vital Signs of Human Beings," Zhejiang University, Hangzhou, China. (June 8, 2019 - June 9, 2019).

68. Recent Advances of Numerical Methods for Nonlinear Problems, "Finite Element Methods for Eigenvalue Problems and Spectral Indicator Method," Hangzhou Normal University, Hangzhou, China. (June 1, 2019 - June 3, 2019).

69. PDE Inverse Problems and Imaging, "Limited Aperture Inverse Scattering Problems using Bayesian Approach and Extended Sampling Method," Civil Aviation University of China, Tianjin, China. (May 25, 2019 - May 26, 2019).

70. AMS Spring Central and Western Joint Sectional Meeting, "Spectral indicator methods for the non-selfadjoint Steklov eigenvalue problem," American Mathematical Society, University of Hawaii at Manoa. (March 22, 2019 - March 24, 2019).

71. Spectral indicator methods for the non-selfadjoint Steklov eigenvalue problem, AMS Spring Central and Western Joint Sectional Meeting, University of Hawaii at Manoa, Honolulu, HI, Mar. 22-24, 2019. (Invited Mini-symposium Talk)

72. Finite Element Methods for Eigenvalue Problems, University of South Carolina, Nov. 30, 2018. (Invited Seminar Talk)

73. Memory Efficient SIM for Large Non-Hermitian Matrices, Finite Element Circus, University of Delaware, Nov. 9-10, 2018

74. Finite Element Methods for Eigenvalue Problems, Auburn University, Oct. 25, 2018. (Invited Seminar Talk)

75. Extended Sampling Method in Inverse Scattering, AMS Fall Central Sectional Meeting, University of Michigan, Ann Arbor, MI, October 20-21, 2018. (Invited Mini-symposium Talk)

76. Extended Sampling Method in Inverse Scattering, Hong Kong University of Science and Technology, Sep. 19, 2018. (Invited Seminar Talk)

77. Finite Element Methods for Eigenvalue Problems, Hong Kong Polytechnic University, Sep. 14, 2018. (Invited Seminar Talk)

78. A Multilevel Memory Efficient Spectral Indicator Method for Eigenvalue Problems, Workshop on Computational Methods for Eigenvalue Problems, Tianyuan Mathematical Center in Northeast China, Changchun, China, Aug. 14-17, 2018. (Plenary Talk)

79. The Quad-Curl Problem, Harbin Institute of Technology, Harbin, China, Jul. 23, 2018. (Invited Seminar Talk)

80. Statistical and Computational Inverse Problems - Introduction, Chinese Academy of Sciences, Jul. 16, 2018. (Invited Seminar Talk)

81. A Multilevel Memory Efficient Spectral Indicator Method for Eigenvalue Problems, National Chiao Tung University, July 10, 2018. (Invited Seminar Talk)

82. Extended Sampling Method in Inverse Scattering, The 12th AIMS Conference on Dynamical Systems, Differential Equations and Application, Taipei, Jul. 5-9, 2018. (Invited Mini-symposium Talk)

83. A Memory Efficient Spectral Indicator Method for Eigenvalue Problems, Spectral Geometry: Theory, Numerical Analysis and Applications, BIRS, Banff, Canada, Jul. 2-6, 2018. (Invited Talk)

84. A Bayesian approach for the inverse medium problem using Steklov eigenvalues, Joint CMA-AMS Meeting, Fudan University, Jun. 11-14, 2018. (Invited Mini-symposium Talk)

85. Extended Sampling Method in Inverse Scattering, The 10th Annual Meeting on Inverse Problems, Tianyuan Mathematical Center in Northeast China, Changchun, China, May 28-31, 2018. (Invited Mini-symposium Talk)

86. Hodge Decomposition for a Quad-Curl Problem, 2018 IEEE International Conference on Computational Electromagnetics (ICCEM), Chengdu, China, Mar. 26-28, 2018.

87. Finite Element Methods for Eigenvalue Problems, University of Science and Technology, Jan. 9, 2018. (Invited Seminar Talk)

88. Direct and Inverse Steklov Eigenvalue Problems, Chinese Academy of Sciences, Jan. 8, 2018. (Invited Seminar Talk)

89. Direct and Inverse Steklov Eigenvalue Problems, Beijing Computational Science Research Center, Jan. 5, 2018. (Invited Seminar Talk)

90. 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.

91. Finite Element Methods for Eigenvalue Problems, Fudan University, Shanghai, Dec. 18, 2017. (Invited Seminar Talk)

92. Spectrum Problems in Inverse Scattering Theory, Institute of Applied Mathematics, Chinese Academy of Sciences, Aug. 28, 2017. (Invited Seminar Talk)

93. Spectrum Problems in Inverse Scattering Theory, HeiLongJiang University, Aug 25, 2017. (Invited Seminar Talk)

94. Recursive Integral Method for Eigenvalue Problems, Harbin Institute of Technology, Aug. 21-23, 2017. (Invited Talk Series)

95. 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)

96. Spectrum Indicator Method with Cayley Transformation for Eigenvalue Problems, South East University, Nanjing, China, Aug. 2, 2017. (Invited SeminarTalk)

97. 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)

98. 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)

99. 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)

100. 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)

101. Recursive Integral Method with Cayley Transformation, Changsha University of Science & Technology, June 21, 2017. (Invited Seminar Talk)

102. Recursive Integral Method for Eigenvalue Problems, Chinese Academy of Sciences, June 9, 16, 23, 30, 2017. (Invited Talk Series)

103. 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)

104. 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)

105. Recursive Integral Method with Cayley Transformation, Finite Element Circus, Rutgers University, April 21-22, 2017.

106. Recursive Integral Method with Cayley Transformation, Southern Methodist University, Apr. 12, 2017. (Invited Seminar Talk)

107. RIM-C for Transmission Eigenvalues, SIAM Conference on Computational Sciences and Engineering (CSE), Atlanta, Feb. 27 - Mar. 3, 2017. (Invited Mini-symposium Talk)

108. A Novel Eigensolver with Cayley Transformation, Institute of Mathematics and its Applications (IMA), University of Minnesota, Feb 23rd, 2017. (Invited Seminar Talk)

109. Finite Element Methods for Eigenvalue Problems, UESTC, ChengDu, Dec. 23rd, 2016. (Invited Seminar Talk)

110. A Novel Eigenvalue Solver Using Spectrum Projection, 20th IMACS World Congress, Xiamen University, Dec. 10-14, 2016. (Invited Mini-symposium Talk)

111. A Novel Solver for Transmission Eigenvalues, Mathematical Analysis of Metamaterials and Applications Workshop, TSIMF, Sanya, Dec. 5-9, 2016. (Invited Talk)

112. A novel parallel eigensolver using spectral projection (an eigensolver which does not actually compute eigenvalues), Finite Element Circus, WPI, Oct. 14-15, 2016.

113. Through-Wall Detection of Human Being's Movement by UWB Radar, Harbin Institute of Technology, July 27, 2016. (Invited Seminar Talk)

114. Recursive integral method for transmission eigenvalues, Workshop on Inverse Problems, Computation, and Applications, Zhejiang University, July 3-4, 2016. (Invited Talk)

115. A mixed finite element method for the quad-curl eigenvalue problems, Chinese Academy of Sciences, June 28, 2016. (Invited Seminar Talk)

116. Spectrum Projection Method for a Non-selfadjoint Eigenvalue Problem, CSRC, June 23, 2016. (Invited Seminar Talk)

117. A probing method for the transmission eigenvalue problem, Chinese Academy of Sciences, June 23, 2016. (Invited Seminar Talk)

118. 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)

119. Recursive integral method for transmission eigenvalues, Fudan University, China, June 2, 2016. (Invited Seminar Talk)

120. Recursive integral method for transmission eigenvalues, Chongqing Technology University, China, May 24, 2016. (Invited Seminar Talk)

121. A mixed finite element method for the quad-curl eigenvalue problems, Xi'an Jiaotong University, May 16, 2016. (Invited Seminar Talk)

122. A probing method for the transmission eigenvalue problem, Finite Element Circus, University of Maryland, April 15-16, 2016.

123. 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)

124. A probing method for the transmission eigenvalue problem, Chongqing University, Dec. 15, 2015. (Invited Seminar Talk)

125. Recursive integral method for transmission eigenvalues, Chinese Academy of Sciences, China, Dec. 21, 2015. (Invited Seminar Talk)

126. Recursive integral method for transmission eigenvalues, Heilongjiang University, China, Aug. 23rd, 2015. (Invited Seminar Talk)

127. Numerical methods for transmission eigenvalues, The 2nd Chongqing Workshop on Computational and Applied Mathematics, Chongqing university, China, Aug. 16-18, 2015. (Invited Talk)

128. 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)

129. 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)

130. The reconstruction of obstacles in a waveguide using finite elements, Chinese Academy of Sciences, Beijing, China, Jul. 26, 2015. (Invited Seminar Talk)

131. Recursive integral method for transmission eigenvalues, The 3rd Computation Mathematics Day, Chongqing University, Jun. 27, 2015. (Invited Talk)

132. An efficient finite element method for grating profile reconstruction, Applied Inverse Problems Conference, University of Helsinki, Finland, May 25-29, 2015. (Invited Seminar Talk)

133. The reconstruction of obstacles in a waveguide using finite elements, iWap Workshop, University of Bremen, Germany, Apr. 7-10, 2015. (Invited Talk)

134. Recursive integral method for transmission eigenvalues, Finite Element Circus, George Mason University, Mar. 27-28, 2015.

135. 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)

136. PDE-Constraint Optimization, Department of Geophysics, Jilin University, Dec. 15-26, 2014. (Invited Lecture Series)

137. C^0 IPG Method for Biharmonic Eigenvalue Problems, LSEC, Chinese Academy of Sciences, Beijing, China, Dec. 12, 2014. (Invited Seminar Talk)

138. 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)

139. C^0IPG for biharmonic eigenvalue problems, AMS Section Meeting, University of North Carolina at Greensboro, Nov. 8-9, 2014. (Invited Mini-symposium Talk)

140. Numerical Methods for Transmission Eigenvalues, Applied Mathematics Seminar, Department of Mathematics, Michigan State University, Oct. 17, 2014. (Invited Seminar Talk)

141. Numerical Methods for Transmission Eigenvalues, Workshop on Computational Methods for Eigenvalue Problems, LESC, Chinese Academy of Sciences, Jul. 15-16, 2014. (Invited Talk)

142. Transmission Eigenvalues: Background, Application, and Computation, Harbin Institute of Technology, Jul. 3, Jul. 4, Jul. 9, 2014. (Invited Seminar Talks)

143. An eigenvalue method in inverse scattering, University of Heilongjiang, Jun. 26, 2014. (Invited Seminar Talk)

144. C^0IPDG 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)

145. C^0IPDG for the biharmonic eigenvalue problem, AMCS Seminar, University of Iowa, Apr. 11, 2014. (Invited Talk)

146. Numerical Methods for Transmission Eigenvalues, Louisiana State University, Mar. 11, 2014. (Invited Seminar Talk)

147. Reconstruction of Neumann eigenvalues and support of a sound-hard obstacle, Chinese Academy of Sciences, Dec. 20, 2013. (Invited Seminar Talk)

148. 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)

149. Numerical methods for transmission eigenvalues, Chongqing University, Dec. 15, 2013, Chongqing, China. (Colloquium Talk)

150. A GPU-based recursive eigenvalue solver, Finite Element Circus, Oct. 18-19, 2013, University of Delaware.

151. An inverse scattering problem for cavities, AMS Southeastern Sectional Meeting, October 5-6, 2013, University of Louisville, Louisville, KY. (Invited Mini-symposium Talk)

152. 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)

153. 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)

154. Numerical methods for transmission eigenvalues and their applications, LSEC, Chinese Academy of Sciences, July 16, 2013. (Invited Talk)

155. 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)

156. A multilevel finite element method for transmission eigenvalues of anisotropic media and its application in inverse medium problems, AIPC 2013, Daejon, Korea, July 1-5, 2013. (Invited Mini-symposium Talk)

157. An eigenvalue method for the sound hard obstacles in inverse scattering, AIPC 2013, Daejon, Korea, July 1-5, 2013. (Invited Mini-symposium Talk)

158. Numerical methods for transmission eigenvalues and their applications, Tsinghua University, July 25, 2013. (Invited Talk)

159. 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

160. 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.

161. A multilevel finite element method for transmission eigenvalues of anisotropic media, ICES 2013, (Invited Talk)

162. A multilevel finite element method for transmission eigenvalues of anisotropic media, University of Delaware, Nov. 20, 2012. (Invited Talk)

163. An eigenvalue method in inverse scattering, International conference on Inverse Problems and Related Topics, Nanjing, China, Oct. 22-26, 2012. (Invited Talk)

164. 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)

165. A C^0 IPDG method for the bi-harmonic eigenvalue problem, Finite Element Circus, University of Pittsburg, Oct. 19-20, 2012.

166. Numerical method for transmission eigenvalues, Wayne State University, Oct. 8, 2012. (Invited Colloquium Talk)

167. A decomposition method for an interior inverse scattering problem, Chinese Academy of Sciences, June, 2012. (Invited Talk)

168. A mixed finite element method for the quad-curl problem, Tsinghua University, June, 2012. (Invited Colloquium Talk)

169. 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)

170. A mixed finite element method for the quad-curl problem, Finite Element Circus, Rutgers University, Apr. 13-14, 2012.

171. An eigenvalue method using multiple frequency data, The 8th international conference on scientific computing and applications, UNLV, Apr. 1-4, 2012.

172. Finite element methods for Maxwell's transmission eigenvalues, AMS Section Meeting, University of South Florida, Mar. 17-18, 2012. (Invited Talk)

173. A coupled A coupled BEM and FEM for the interior transmission problem, Finite Element Circus, UCONN, Oct. 14-15, 2011.

174. 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)

175. 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.

176. 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)

177. An inverse electromagnetic scattering problem for cavity, International Conference on Applied Mathematics and Interdisciplinary Research, June 13-15, 2011, Nankai University, Tianjin, China.

178. Estimation of transmission eigenvalues and index of refraction from near filed data, Applied Inverse Problems Conference, May 23-27, 2011 Texas A&M University, College Station, Texas. (Invited Talk)

179. A simple finite element method for transmission eigenvalues, Finite Element Circus, IMA, University of Minnesota, Nov. 5 - 6, 2010.

180. Estimation of transmission eigenvalues and index of refraction from near filed data, Scattering theory seminar, University of Delaware, Oct. 21, 2010. (Invited Talk)

181. Iterative methods for transmission eigenvalues, International Workshop on Inverse Problems and Applications, Donghua University of Technology, Jiangxi, China, Jun. 2 - 5, 2010. (Invited Talk)

182. Characterization of objects in waveguides, Chinese Academy of Science, Beijing, China, May 19, 2010. (Invited Talk)

183. Iterative methods for transmission eigenvalues, Tsinghua University, Beijing, China, May. 17, 2010. (Invited Talk)

184. Analytical and computational methods for transmission eigenvalues, SIAM Conference on Imaging Science, Apr. 12 -14, 2010, Chicago.

185. 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)

186. A new family of high regularity elements, *Finite Element Circus*, The University of Tennessee, Knoxville, October 16-17, 2009.

187. 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)

188. Numerical studies of the reciprocity gap functional method in inverse scattering, *Conference on Applied Inverse Problems*, July 20-24, 2009, Vienna, Austria. (Invited Talk)

189. Finite Element Methods for the Interior Transmission Problems, Inverse Scattering Seminar, University of Delaware, April 16, 2009. (Invited Talk)

190. 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.

191. 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)

192. The Determination of the Support and Surface Conductivity of a Partially Coated Buried Object, *SIAM Annual Meeting*, July 7-11, San Diego, 2008.

193. Inverse Scattering Using Finite Elements and Gap Reciprocity, *SIAM Conference on Imaging Science*, July 7-9, San Diego, 2008.

194. DG Method for Generalized Eigen-oscillations of Complex Helmholtz Equations, *The 6th International Conference on Differential Equations*, May 2008, Baltimore, USA.

195. Inverse Scattering Theory for MIMO Radar with applications in Wall Penetration, *Delaware EPSCoR Fall 2007 Research Forum*, Delaware Biotechnology Institute, Nov. 2007.

196. Discontinuous Galerkin Method for complex Helmholtz eigenproblems, *Finite Element Circus*, Cornell University, Oct. 2007.

197. A spectral method for complex Helmholtz equations using generalized Eigen-oscillations, UNC Charlotte, Apr. 2007. (Invited Talk)

198. An Inverse Scattering Problem for a Perfect Conductor Partially Coated by Dielectric, *Applied Mathematics Workshop,* Delaware State University. Aug. 2006.

199. Partition of Unity Finite Element Method Implementation for Poisson Equation. *Finite Element Circus*, Rutgers University, Oct. 2005.

200. Learning from Student Feedbacks, *Annual Conference for Graduate Teaching Assistants*, University of Delaware, Aug. 2005.

201. An Algebraic Multigrid Method of Micromagnetism Model on Non-uniform Grids. *1005th AMS Meeting*, University of Delaware, Apr. 2005

202. 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).