

## CURRICULUM VITAE (09/2017)

### CONTACT INFORMATION

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### EDUCATION

- Ph.D. in Mathematics 08/2007 The Chinese University of Hong Kong
- B.S. in Mathematics 07/2001 Harbin University of Science and Technology, China

### ACADEMIC AND PROFESSIONAL EXPERIENCE

- Associate Professor, 08/2014–present; Associate Head, 09/2017–present
  - ◊ Math Department, Hong Kong Baptist University
- (tenure-track) Assistant Professor, 09/2011–08/2014
  - ◊ Math Department, University of North Carolina, Charlotte, USA
- (tenure-track) Lecturer/Assistant Professor, 12/2010–08/2011
  - ◊ Math Department, University of Reading, UK
- Visiting Assistant Professor, 09/2010–08/2011
  - ◊ Math Department, University of California, Irvine, USA
- Acting Assistant Professor, 08/2007–09/2010
  - ◊ Math Department, University of Washington, Seattle, USA

### RESEARCH INTERESTS

Inverse Problems and Imaging; Partial Differential Equations; Mathematical Materials Science; Scattering Theory; Spectral Theory; Geometric Integration for Dynamical Systems; Numerical Analysis and Scientific Computing

### BOOK/MONOGRAPH/BOOK CHAPTER

- [1] L. Borcea, H. Kang, H. Liu and G. Uhlmann (edited by H. Ammari and J. Garnier), *Inverse Problems and Imaging*, Panoramas et Synthèses, Numéro 44, Société Mathématique de France, 2015
- [2] J. Li, H. Liu and J. Zou, *An efficient multilevel algorithm for inverse scattering problem*, Advances in Computation and Intelligence, Lecture Notes in Computer Science, Springer-Berlin, 2007.

## PREPRINTS AND JOURNAL PUBLICATIONS

### Submitted

- [1] Y. Deng, J. Li and H. Liu, On identifying magnetized anomalies using geomagnetic monitoring, preprint, 2018
- [2] H. Bastian, Y.-H. Lin and H. Liu, On localizing and concentrating electromagnetic fields, preprint, 2018
- [3] Y. Deng, H. Liu and X. Liu, Recovery of an embedded obstacle and the surrounding medium for Maxwell's system, [arXiv:1801.02008](#)
- [4] X. Wang, M. Song, Y. Guo, H. Li and H. Liu, Fourier method for identifying electromagnetic sources with multi-frequency far-field data, [arXiv:1801.03263](#)
- [5] X. Cao, Y.-H. Lin and H. Liu, Simultaneously recovering potentials and embedded obstacles for anisotropic fractional Schrödinger operators, [arXiv:1712.00937](#)
- [6] H. Li and H. Liu, On anomalous localized resonance and plasmonic cloaking at optical frequencies, [arXiv:1711.00254](#)
- [7] J. Li, H. Liu and H. Sun, On an inverse elastic wave imaging scheme for nearly incompressible materials, [arXiv:1711.00242](#)
- [8] E. Blåsten and H. Liu, Addendum to “On vanishing near corners of transmission eigenfunctions”, [arXiv:1710.08089](#)
- [9] J. Li, X. Li and H. Liu, Reconstruction via the intrinsic geometric structures of transmission eigenfunctions, [arXiv:1706.04418](#)
- [10] E. Blåsten and H. Liu, Recovering piecewise-constant refractive indices by a single far-field pattern, [arXiv:1705.00815](#)
- [11] Y. Guo, J. Li, H. Liu and X. Wang, Two gesture-computing approaches by using electromagnetic waves, [arXiv:1705.07713](#)
- [12] Y. Deng, H. Liu and G. Uhlmann, On an inverse boundary problem arising in brain imaging, [arXiv:1702.00154](#)
- [13] E. Blåsten and H. Liu, On corners scattering stably and stable shape determination by a single far-field pattern, [arXiv:1611.03647](#)

### Accepted/In Press

- [1] Y. Deng, H. Li and H. Liu, On spectral properties of Neuman-Poincaré operator and plasmonic cloaking in 3D elastostatics, *J. Spectral Theory*, [arXiv:1702.06460](#)
- [2] D. Zhang, Y. Guo, J. Li and H. Liu, Locating multiple multipolar acoustic sources using the direct sampling method, *Comm. Comput. Phys.*, 2018
- [3] J. Li, H. Liu and H. Sun, On a gesture-computing technique using electromagnetic waves, *Inverse Problems and Imaging*, [arXiv:1708.02848](#)

- [4] H. Li, J. Li and H. Liu, On novel elastic structures inducing plasmon resonances with finite frequencies and cloaking due to anomalous localized resonance, *Journal de Mathématiques Pures et Appliquées*, [arXiv:1704.07981](https://arxiv.org/abs/1704.07981)
- [5] H. Liu, L. Rondi and J. Xiao, Mosco convergence for  $H(\text{curl})$  spaces, higher integrability for Maxwell's equations, and stability in direct and inverse EM scattering problems, *Journal of the European Mathematical Society (JEMS)*, [arXiv:1603.07555](https://arxiv.org/abs/1603.07555)

## Published

- [1] H. Liu and J. Xiao, On electromagnetic scattering from a penetrable corner, *SIAM J. Math. Anal.*, **49** (2017), no. 6, 5207–5241.
- [2] X. Ji and H. Liu, On isotropic cloaking and interior transmission eigenvalue problems, *European J. Appl. Math.*, **29** (2018), no. 2, 253–280.
- [3] J. Li, X. Li, H. Liu and Y. Wang, Electromagnetic interior transmission eigenvalue problem for inhomogeneous media containing obstacles and its applications to near cloaking, *IMA J. Appl. Math.*, **82** (2017), 1013–1042.
- [4] E. Blåsten and H. Liu, On vanishing near corners of transmission eigenfunctions, *Journal of Functional Analysis*, **273** (2017), 3616–3632.
- [5] Y. Guo, J. Li, H. Liu and X. Wang, Mathematical design of a novel input/instruction device using a moving emitter, *Inverse Problems*, **33** (2017), 105009.
- [6] E. Blåsten, X. Li, H. Liu and Y. Wang, On vanishing and localizing of transmission eigenfunctions near singular points: a numerical study, *Inverse Problems*, **33** (2017), 105001.
- [7] Y. Deng, H. Liu and G. Uhlmann, On regularized full- and partial-cloaks in acoustic scattering, *Communications in Partial Differential Equations*, **42** (2017), no. 6, 821–851.
- [8] H. Liu and J. Xiao, Decoupling elastic waves and its applications, *J. Differential Equations*, **265** (2017), no. 8, 4442–4480.
- [9] Y. Shi, Y. Li, S. Li and H. Liu, State feedback design for nonlinear quadratic systems with randomly occurring actuator saturation, *International Journal of Control, Automation and Systems*, **15** (2017), Issue 3, pp. 1117–1124.
- [10] H. Li and H. Liu, On three-dimensional plasmon resonance in elastostatics, *Annali di Matematica Pura ed Applicata*, **196** (2017), Issue 3, pp 1113–1135.
- [11] H. Liu and X. Liu, Recovery of an embedded obstacle and its surrounding medium by formally-determined scattering data, *Inverse Problems*, **33** (2017), 065001.
- [12] H. Liu, Y. Wang and S. Zhong, *Nearly non-scattering electromagnetic wave set and its application*, *Zeitschrift für Angewandte Mathematik und Physik*, **68** (2017), 68:35.
- [13] J. Li, H. Liu and Y. Wang, *Recovering an electromagnetic obstacle by a few phaseless backscattering measurements*, *Inverse Problems*, **33** (2017), 035011.

- [14] X. Wang, Y. Guo, D. Zhang and H. Liu, Fourier method for recovering acoustic sources from multi-frequency far-field data, *Inverse Problems*, **33** (2017), 035001.
- [15] H. Liu, M. Petrini, L. Rondi and J. Xiao, Stable determination of sound-hard polyhedral scatterers by a minimal number of scattering measurements, *J. Differential Equations*, **262** (2017), no. 3, 1631–1670.
- [16] H. Li and H. Liu, On anomalous localized resonance for the elastostatic system, *SIAM J. Math. Anal.*, **48** (2016), no. 5, 3322–3344.
- [17] Y. Deng, H. Liu and G. Uhlmann, Full and partial cloaking in electromagnetic scattering, *Arch. Ration. Mech. Anal.*, **223** (2017), 265–299.
- [18] H. Liu, Y. Wang and C. Yang, Mathematical design of a novel gesture-based instruction/input device using wave detection, *SIAM J. Imaging Sci.*, **9** (2016), no. 2, 822–841.
- [19] G. Hu, J. Li, H. Liu and Q. Wang, A numerical study of complex reconstruction in inverse elastic scattering, *Comm. Comput. Phys.*, **19** (2016), no. 5, 1265–1286.
- [20] Y. Guo, D. Hömberg, G. Hu, J. Li and H. Liu, A time-domain sampling method for inverse acoustic scattering problems, *J. Comput. Phys.*, **314** (2016), 647–660.
- [21] K. Ando, H. Kang and H. Liu, Plasmon resonance with finite frequencies: a validation of the quasi-static approximation for diametrically small inclusions, *SIAM J. Appl. Math.*, **76** (2016), no. 2, 731–749.
- [22] H. Liu and G. Uhlmann, Determining both sound speed and internal source in thermo and photoacoustic tomography, *Inverse Problems*, **31** (2015), 105005. **(Selected into Editorial Highlights of 2015 by the journal)**
- [23] J. Li, P. Li, H. Liu and X. Liu, Recovering multiscale buried anomalies in a two-layered medium, *Inverse Problems*, **31** (2015), 105006.
- [24] H. Li, J. Li and H. Liu, On quasi-static cloaking due to anomalous localized resonance in  $\mathbb{R}^3$ , *SIAM J. Appl. Math.*, **75** (2015), 1245–1260.
- [25] J. Li and H. Liu, Recovering a polyhedral obstacle by a few backscattering measurements, *J. Differential Equations*, **259** (2015), 2101–2120.
- [26] G. Hu and H. Liu, Nearly cloaking the elastic wave fields, *Journal de Mathématiques Pures et Appliquées*, **104** (2015), 1045–1074.
- [27] G. Hu, J. Li and H. Liu, Uniqueness in determining refractive indices by formally-determined far-field data, *Applicable Analysis*, **94** (2015), 1259–1269.
- [28] J. Li, H. Liu, L. Rondi and G. Uhlmann, Regularized transformation-optics cloaking for the Helmholtz equation: from partial cloak to full cloak, *Comm. Math. Phys.*, **335** (2015), 671–712.
- [29] J. Li, H. Liu and Q. Wang, Fast imaging of electromagnetic scatterers by a two-stage multilevel sampling method, *Discrete and Continuous Dynamical Systems, Series S*, **8** (2015), 547–561.

- [30] H. Liu, H. Zhao and C. Zou, Determining scattering support of anisotropic acoustic mediums and obstacles, *Comm. Math. Sci.*, **13** (2015), no. 4, 987–1000. (Special issue in honor of Prof. George Papanicolaou’s 70th birthday)
- [31] J. Li, H. Liu and H. Sun, Damping mechanisms for regularized transformation-acoustics cloaking, *Contemp. Math.*, American Math. Soc., **615** (2014), 233–253. (Special issue in honor of Prof. Gunther Uhlmann’s 60th birthday)
- [32] G. Hu, J. Li, H. Liu and H. Sun, Inverse elastic scattering for multiscale rigid bodies with a single far-field pattern, *SIAM J. Imaging Sci.*, **7** (2014), 1799–1825.
- [33] G. Hu, J. Li and H. Liu, Recovering complex elastic scatterers by a single far-field pattern, *J. Differential Equations*, **257** (2014), 469–489.
- [34] G. Bao, H. Liu and J. Zou, Nearly cloaking the full Maxwell equations: cloaking active contents with general conducting layers, *Journal de Mathématiques Pures et Appliquées* (9), **101** (2014), 716–733.
- [35] J. Li, H. Liu, Y. Sun and Q. Wang, Ground detection by a single electromagnetic measurement, *J. Comput. Phys.*, **257** (2014), 554–571.
- [36] J. Li, H. Liu and J. Zou, Locating multiple multiscale acoustic scatterers, *SIAM Multiscale Model. Simul.*, **12** (2014), 927–952.
- [37] G. Bao and H. Liu, Nearly cloaking the electromagnetic fields, *SIAM J. Appl. Math.*, **74** (2014), 724–742.
- [38] J. Li, H. Liu and Q. Wang, Enhanced multilevel linear sampling methods for inverse scattering problems, *J. Comput. Phys.*, **257** (2014), 554–571.
- [39] J. Li, H. Liu and Q. Wang, Locating multiple multi-scale electromagnetic scatterers by a single far-field measurement, *SIAM J. Imaging Sci.*, **6** (2013), 2285–2309.
- [40] I. Kocyigit, H. Liu and H. Sun, Regular scattering patterns for near-cloaking devices and their implications for invisibility cloaking, *Inverse Problems*, **29** (2013), 045005.
- [41] J. Li, H. Liu, Z. Shang and H. Sun, Two single-shot methods for locating multiple electromagnetic scatterers, *SIAM J. Appl. Math.*, **73** (2013), 1721–1746.
- [42] J. Li and H. Liu, Optimal shape for a nozzle design problem using an arbitrary Lagrangian-Eulerian finite element method, *Journal of Inverse and Ill-posed Problems*, **22** (2014), 9–30.
- [43] J. Li, S. Li and H. Liu, Restarted nonlinear conjugate gradient method for parameter identification in elliptic system, *Eurasian J. Math. Comput. Appl.*, Vol. 1, No. 1 (2013), 62–77.
- [44] H. Liu, Schiffer’s conjecture, interior transmission eigenvalues and invisibility cloaking: singular problem vs. nonsingular problem, *Contemp. Math.*, American Math. Soc., **598** (2013), 147–154. (Special issue in honor of Prof. Sigurdur Helgason’s 85th birthday)
- [45] H. Liu, On near-cloak in acoustic scattering, *J. Differential Equations*, **254** (2013), 1230–1246.

- [46] H. Liu, Z. J. Shang, H. Sun and J. Zou, On singular perturbation of the reduced wave equation and scattering from an embedded obstacle, *J. Dynamics and Differential Equations*, **24** (2012), 803–821.
- [47] J. Li and H. Liu, A class of polarization-invariant directional cloaks by concatenation via transformation optics, *Progress in Electromagnetics Research*, **123** (2012), 175–187.
- [48] H. Liu and H. Sun, Enhanced near-cloak by FSH lining, *Journal de Mathématiques Pures et Appliquées* (9), **99** (2013), 17–42. (**Awarded Highly Cited Research in 12/2016.**)
- [49] J. Li, H. Liu and H. Sun, Enhanced approximate cloaking by SH and FSH lining, *Inverse Problems*, **28** (2012), 075011. (**Selected as Insights by the journal**)
- [50] J. Li, H. Liu, H. Sun and J. Zou, Reconstructing acoustic obstacles by planar and cylindrical waves, *J. Math. Phys.*, **53** (2012), 103705. (**Selected as Research Highlights and Cover by the journal**)
- [51] J. Li, H. Liu, H. Sun and J. Zou, Imaging obstacles by hypersingular point sources, *Inverse Problems and Imaging*, **7** (2013), 545–563.
- [52] K. Agarwal, X. Chen, L. Hu, H. Liu and G. Uhlmann, Polarization-invariant directional cloaking by transformation optics, *Progress in Electromagnetics Research*, **118** (2011), pp. 415–423.
- [53] H. Liu and T. Zhou, Transformation optics and approximate cloaking, *Contemp. Math.*, American Math. Soc., **559** (2011), 65–83.
- [54] H. Liu and T. Zhou, Two dimensional invisibility cloaking via transformation optics, *Discrete and Continuous Dynamical Systems, Series A*, **31** (2011), pp. 525–543.
- [55] J. Li, H. Liu and S. Mao, Approximate acoustic cloaking in inhomogeneous isotropic space, *Science China Math*, **56** (2013), 2631–2644.
- [56] H. Liu and T. Zhou, On approximate electromagnetic cloaking by transformation media, *SIAM J. Appl. Math.*, **71** (2011), 218–241.
- [57] U. Hetmaniuk, H. Liu, On three dimensional active acoustic cloaking devices and their simulation, *SIAM J. Appl. Math.*, **70** (2010), 2996–3021.
- [58] H. Liu, Virtual reshaping and invisibility in obstacle scattering, *Inverse Problems*, **25**(2009), 045006. (**Selected into Editorial Highlights of 2009 by the journal**)
- [59] H. Liu, H. Zhang and J. Zou, Recovery of polyhedral scatterers by a single electromagnetic far-field measurement, *J. Math. Phys.*, **50** (2009), 123506.
- [60] J. Li, H. Liu and J. Zou, Strengthened linear sampling method with a reference ball, *SIAM J. Sci. Comput.*, **31** (2009), no. 6, 4013–4040.
- [61] X. Ding, H. Liu, Z. Shang and G. Sun, Preservation of stability properties near fixed points of linear Hamiltonian systems by symplectic integrators, *Appl. Math. Comp.*, **217** (2011), 6105–6114.

- [62] H. Liu, On recovering polyhedral scatterers with acoustic far-field measurements, *IMA J. Appl. Math*, **74** (2009), 264–272.
- [63] H. Liu, and J. Zou, Uniqueness in determining multiple polygonal scatterers of mixed type, *Discrete and Continuous Dynamical Systems, Series B*, **9** (2008), no. 2, 375–396
- [64] H. Liu, A global uniqueness for formally determined inverse electromagnetic obstacle scattering, *Inverse Problems*, **24** (2008), 035018. **(Selected into Editorial Highlights of 2008 by the journal)**
- [65] H. Liu, M. Yamamoto and J. Zou, New reflection principles for Maxwell equations and their applications, *Numer. Math.: TMA*, **2** (2009), 1–17.
- [66] J. Li, H. Liu and J. Zou, Multilevel linear sampling method for inverse scattering problems, *SIAM J. Sci. comput.*, **30** (2008), 1228–1250.
- [67] H. Liu, M. Yamamoto and J. Zou, Reflection principle for Maxwell’s equations and its application to inverse electromagnetic scattering problem, *Inverse Problems* **23** (2007), 2357–2366. **(Selected into Editorial Highlights of 2007 by the journal)**
- [68] H. Liu and J. Zou, On unique determination of partially coated polyhedral scatterers with far-field measurements, *Inverse Problems*, **23** (2007), 297–308.
- [69] H. Liu and J. Zou, Zeros of Bessel and spherical Bessel functions and their applications for uniqueness in inverse acoustic obstacle scattering problems, *IMA J. Appl. Math.* **72** (2007), 817–831.
- [70] J. Hong, S. Jiang, C. Li and H. Liu, Explicit multi-symplectic methods for Hamiltonian wave equations, *Commun. Comput. Phys.*, **2** (2007), no. 4, 662–683.
- [71] H. Liu, K. Zhang and R. Zhang, A global uniqueness result in inverse acoustic obstacle scattering problem, *Northeast Math. J.*, **23**(2007), 397–402.
- [72] H. Liu and J. Zou, Uniqueness in an inverse acoustic obstacle scattering problem for both sound-hard and sound-soft polyhedral scatterers, *Inverse Problems*, **22** (2006), 515–524. **(Featured Article of the journal for year 2006)**
- [73] H. Liu and J. Zou, Some new additive Runge-Kutta methods and their applications, *J. Comput. Appl. Math.* **190** (2006), 74–98.
- [74] H. Liu and K. Zhang, Multi-symplectic Runge-Kutta-type methods for Hamiltonian wave equations, *IMA J. Numer. Anal.* **26** (2006), 252–271.
- [75] J. Hong, H. Liu and G. Sun, The multi-symplecticity of partitioned Runge- Kutta methods for Hamiltonian PDEs, *Math. Comp.* **75** (2006), no. 253, 167–181.
- [76] R. Zhang, H. Liu and K. Zhang, Numerical dispersion relation of multi-symplectic Runge-Kutta methods for Hamiltonian PDEs, *Northeast Math. J.*, **22** (2006), 349–356.
- [77] R. P. K. Chan, H. Liu and G. Sun, Efficient symplectic Runge-Kutta methods, *Appl. Math. Comput.*, **172** (2006), 908–924.
- [78] J. Hong, H. Liu and G. Sun, Spurious behaviors of a symplectic integrator, *Comput. Math. Appl.*, **50** (2005), no. 3-4, 519–528.

- [79] H. Liu and G. Sun, Implicit Runge-Kutta methods based on Lobatto quadrature formula, *Inter. J. Comput. Math.*, **82** (2005), 77–88.
- [80] H. Liu, K. Zhang and R. Zhang, MSPRK methods for the Korteweg-de Vries equation, *Northeast Math. J.*, **21** (2005), no.4, 387–390.
- [81] H. Liu and G. Sun, Symplectic RK and symplectic PRK methods with real eigenvalues, *J. Comput. Math.* **22** (2004), 769–776.
- [82] H. Liu, X. Liu and T. Wang, MBSP and CBSP of Orlicz functional space, *Acta Anal. Funct. Appl.*, **3** (2001), no. 3, 236–242. (**An undergraduate paper**)

## CONFERENCE PROCEEDING PUBLICATIONS

- [1] H. Liu and J. Zou, On Uniqueness in Inverse Acoustic and Electromagnetic Obstacle Scattering Problems, *Journal of Physics: Conference Series*, Applied Inverse Problems, Vancouver, Canada, 2007
- [2] H. Liu and J. Zou, On Uniqueness in Inverse Obstacle Scatterings, *Proceedings of The 2nd International Conference on Scientific Computing and Partial Differential Equations and The First East Asia SIAM Symposium*, Hong Kong., 2006
- [3] H. Liu and J. Zou, Inverse Obstacle Scattering: Some Theory and Numerics, *Oberwolfach Reports*, Vol 4, Issue 1, 2007, 331–333

## PATENT

- ◇ J. Li and H. Liu, *A real-time medical monitoring and alerting method based on mobile devices* (in Chinese), China Patent, pending on final approval, Application Number: CN201510727435.0, Publicity Number: CN105306717A, 2016.

## OTHER WRITINGS: NEWS REPORT

- ◇ H. Liu and M. Ng, “*Hong Kong Hosts 2014 SIAG/IS Conference*”, *SIAM NEWS*, Oct. 2014. <https://sinews2.siam.org/DetailsPage/tabid/607/ArticleID/214/Hong-Kong-Hosts-2014-SIAG-IS-Conference.aspx>

## HONOURS, AWARDS AND PRIZES

- Faculty/School Performance Award, HKBU, 2018.
- Calderón Prize, Inverse Problems International Association (IPIA), 2017.
- Plenary Speaker, AIP Conference 2017, Inverse Problems International Association (IPIA), Hangzhou, China.
- Academic Staff Fellowship, HKBU, 2017.
- The paper “Enhanced Near-Cloak by FSH Lining” was awarded Highly Cited Research by the *Journal des Mathématiques Pures et Appliquées* in 12/2016.
- MediaV Young Researcher Prize, ICIP 2016, Seoul, South Korea.



- Plenary Speaker, AIP Conference 2015, Inverse Problems International Association (IPIA), Helsinki, Finland.
- 4 papers were selected as “Editorial Highlights of the Year” by the journal Inverse Problems (2007/2008/2009/2015); 1 paper was selected as “Featured Article” (2006) and 1 paper was selected as “Insight Article” (2012) by the journal Inverse Problems; 1 paper was selected a “Research Highlights” and Cover by the journal, Journal of Mathematical Physics.
- PIMS Postdoctoral Fellowship, Pacific Institute of Mathematical Sciences, Canada, 2008–2010.
- Award for the Best Research Output by Research Postgraduate Students, The Chinese University of Hong Kong, 2007–2008. ([http://www.cuhk.edu.hk/rao/rps\\_0708.pdf](http://www.cuhk.edu.hk/rao/rps_0708.pdf))

## RESEARCH GRANTS

- PI, Hong Kong RGC General Research Fund, 12302017, 2017–2019. HK\$ 314,900
- PI, HKBU Grant, FRG2/16-17/071, 2017–2018. HK\$ 135,000.
- PI, HKBU Grant, FRG1/16-17/036, 2017–2018. HK\$ 50,000.
- PI, HKBU Grant, FRG2/15-16/012, 2016–2017. HK\$ 142,500
- PI, Incentive Awards for HKPFS Intakes, 2016–. HK\$ 100,000.
- PI, Hong Kong RGC General Research Fund, 12302415, 2015–2018. HK\$ 631,972
- PI, HKBU Grants, FRG1/14-15/009 and FRG2/14-15/033, 2014–2015. HK\$ 200,000
- PI, HKBU Start-up Fund, 2014–2015. HK\$ 120,000
- Co-PI, Hong Kong RGC General Research Fund, 405513, 2013–2016. HK\$ 868,303
- PI, USA NSF Grant, DMS 1207784, 2012–2015. US \$105,000.

## EDITORIAL BOARD

- Inverse Problems and Imaging (IPI), 2016–
- Journal of Korean Society for Industrial and Applied Mathematics (JKSIAM), 2014–
- Contemporary Analysis and Applied Mathematics (CAAM), 2015–

## PLENARY/KEYNOTE LECTURES AT INTERNATIONAL CONFERENCES

1. International Conference on Recent Advances in Computational and Applied Mathematics, Wuhan University, China, Dec 16–18, 2017.
2. Workshop on Mathematical Control Theory and Applications, Sichuan University, China, Nov, 2017

3. Applied Inverse Problems Conference 2017, Inverse Problems International Association (IPIA), Hangzhou, Zhejiang University, China, May 2017.
4. The 8th International Conference on Inverse Problems and Related Topics, June 27–July 1, 2016, Seoul, Korea.
5. The Eighth International Workshop on Theoretical and Computational Analyses for Inverse Problems, June 18–19, 2016, Beijing, Chinese Academy of Sciences, China.
6. Annual Meeting of Beijing Computational Mathematics Society, Beijing, China, July, 2015.
7. AIP Conference 2015, Inverse Problems International Association (IPIA), Helsinki, Finland, May 2015.
8. International Conference on Inverse Problems and Optimal Control, The Chinese University of Hong Kong, Hong Kong, Dec 2014.
9. International Conference on Inverse Problems and PDE Control, Chengdu, Sichuan University, China, July 30–Aug 3, 2012.

#### **INVITED INTENSIVE COURSE**

1. Minicourse on Inverse Problems and Invisibility, National Centre for Theoretical Sciences, National Taiwan University, Taipei, July 2015.

#### **INVITED LECTURES**

1. Invited speaker, Inverse Problems, PDE and Geometry, August 20-23, 2018, Jyväskylä, Finland
2. Invited speaker, IAS Workshop on Inverse Problems, Imaging and PDEs, HKUST Jockey Club Institute for Advanced Study, Hong Kong, March 12–16, 2018.
3. Colloquium speaker, Institute of Computational Mathematics, Chinese Academy of Sciences, Beijing, Feb 28, 2018.
4. Colloquium speaker, Department of Mathematics, Central China Normal University, Wuhan, China, Dec 18, 2017.
5. Invited speaker, Workshop on Mathematical Control Theory and Application, Chengdu, China, Nov 24–27, 2017.
6. Colloquium speaker, Department of Mathematics, Sichuan University, Chengdu, China, Nov 23, 2017.
7. Colloquium speaker, Department of Mathematics, Jilin University, China, Nov 17, 2017.
8. Colloquium speaker, Department of Mathematics, Northeast Normal University, Changchun, China, Nov 16, 2017.
9. Joint Colloquium speaker, Institute of Mathematical Science and Department of Mathematics, The Chinese University of Hong Kong, Nov 3, 2017.

10. IAS Seminar speaker, Jockey Club Institute for Advanced Study, The Hong Kong University of Science and Technology, Nov 1, 2017.
11. Colloquium speaker, Institute of Computational Mathematics, Chinese Academy of Sciences, Beijing, China, July 25, 2017.
12. Colloquium speaker, Department of Mathematics, Harbin Institute of Technology, Harbin, China, July 2017.
13. Colloquium speaker, Department of Mathematics, Heilongjiang University, Harbin, China, July 2017.
14. Invited speaker, Workshop on Seismic Imaging and Inverse Problems, Xi'an Jiaotong University, China, July 1, 2017.
15. Colloquium speaker, Institute of Applied Mathematics, Chinese Academy of Sciences, Beijing, China, June 2017.
16. Colloquium speaker, School of Science, Qilu Technology University, Jinan, Shandong, China, June 2017.
17. Minisymposium speaker, Applied Inverse Problems Conference, Zhejiang University, Hangzhou, China, May 2017.
18. Colloquium speaker, Department of Mathematics, Central South University, Changsha, China, May 2017.
19. Colloquium speaker, Department of Mathematics, Hunan University, Changsha, China, May 2017.
20. Colloquium speaker, Department of Mathematics, Hunan Normal University, Changsha, May 2017.
21. Minisymposium speaker, The 10th International Conference on Computational Physics (ICCP10), Macau, China, Jan 16–20, 2017.
22. Invited speaker, Special Session on Inverse Scattering, Annual Meeting of China Society for Industry and Applied Math, Xiangtan, Hunan, China, Aug 12–14, 2016.
23. Invited speaker, Workshop on Inverse Problems, Computation and Applications, Zhejiang University, Hangzhou, China, July 2016.
24. Colloquium speaker, Institute of Computational Mathematics, Chinese Academy of Sciences, Beijing, China, June 2016.
25. Colloquium speaker, Department of Mathematics, Renmin University, Beijing, China, June 2016.
26. Minisymposium speaker, WCCM XII and APCOM VI, July 24–29, 2016, Seoul, Korea.
27. Minisymposium speaker, The Eighth International Conference on Inverse Problems and Related Topics, Seoul, Korea, June 27–July 1, 2016.
28. Invited speaker, The Eight International Workshop on Theoretical and Computational Analyses for Inverse Problems, Beijing, June 18–19, 2016.

29. Invited speaker, IAS Workshop on Inverse Problems, Imaging and PDEs, HKUST Jockey Club Institute for Advanced Study, Hong Kong, Sept 28–Oct 2, 2015.
30. Invited speaker, The Third Chongqing Workshop on Computational Mathematics, Chongqing, China, June 25–26, 2015.
31. Mini-course on cloaking, National Center of Theoretical Studies, National Taiwan University, Taiwan, July 15–22, 2015.
32. Colloquium speaker, Department of Mathematics, Southeast University, Nanjing, June 3, 2015.
33. Invited speaker, Spectral and Analytic Inverse Problems, Institut Henri Poincare, Paris, France, May 4–7, 2015.
34. Invited minisymposium speaker, The 8th ICIAM, Beijing, China. August 10–14, 2015.
35. Invited speaker, Inverse Problems in the Physical Sciences, IP-Phys2015, Santiago, Chile, August 3–5, 2015.
36. Colloquium speaker, Department of Mathematics, Inha University, Incheon, S. Korea, Dec 2014.
37. Invited speaker, Recent Advances on Numerical Analysis, Shanghai Jiaotong University, Shanghai, November 15–16, 2014.
38. Invited speaker, International Conference on Applied Mathematics, City University of Hong Kong, Hong Kong, December 1–5, 2014.
39. Invited speakers, Minisymposia “High Frequency Wave Propagation and Related Imaging Problems” and “Inverse Scattering Problems in Imaging Science”, SIAM Conference on Imaging Science, May 12–14, 2014.
40. Invited speaker, Applied Math Seminar, Purdue University, West Lafayette, April 4, 2014.
41. Invited speaker, Math Department, University of Texas, Austin, March 18, 2014.
42. Invited speaker, Workshop on Numerical Methods for Wave Propagation in the Second International Conference on Engineering and Computational Mathematics (ECM2013), Hong Kong Polytechnic University, December 16–18, 2013.
43. Invited speaker, Analysis Seminar, Clemson University, SC, Nov 1, 2013.
44. Invited speaker, PDE Seminar, North Carolina State University, Raleigh, NC, Sept 11, 2013.
45. Invited speaker, special session on Applied Analysis and Inverse Problems, AMS Fall Southeastern Section Meeting, University of Louisville, Louisville, KY, October 5–6, 2013.
46. Invited speaker, Applied and Computational Math Seminar, Florida International University, Oct 5 2013.

47. Invited speaker, Copper Country Workshop on Numerical Analysis and Inverse Problems, Aug 12–14, 2013, Michigan Technological University.
48. Invited seminar speaker, Department of Mathematics, Shanghai Jiaotong University, Shanghai, China, July 24, 2013.
49. Invited speaker to minisymposia “Inverse Scattering Problems” and “Invisibility Cloaking”, Applied Inverse Problems Conference, Korea Advanced Institute for Science and Technology, Daejeon, Korea, July 1–5, 2013.
50. Invited speaker, The Second International Conference on Interdisciplinary Applied and Computational Mathematics, Hangzhou, China, 19–22 June, 2013.
51. Invited speaker to the session “Inverse Problems”, The Second Pacific Rim Mathematical Association (PRIMA) Congress, Shanghai, China, June 24–28, 2013.
52. Invited seminar speaker, Department of Mathematics, Southeast University, Nanjing, China, June 9, 2013.
53. Invited seminar speaker, Institute of Applied Mathematics, Chinese Academy of Sciences, Beijing, China, June 7, 2013.
54. Invited seminar speaker, Institute of Mathematics, Chinese Academy of Sciences, Beijing, China, June 6, 2013.
55. Invited speaker, The First Chongqing Workshop on Computational and Applied Mathematics, Chongqing, China, May 30–June 2, 2013.
56. Invited speaker, Mathematical Physics Seminar, Department of Math and Statistics, UNCC, April 2013.
57. Invited speaker, The International Workshop on Scientific Computing for Young Chinese Mathematicians, March 15–17, 2013, Hong Kong SAR.
58. Invited speaker, Workshop on Scattering and Inverse Scattering, Dec 2012, Zhejiang University, China.
59. Invited speaker, International Conference on Inverse Problems and Applications, Sept 17–21, 2012, Hangzhou, Zhejiang University, China.
60. Invited speaker, Workshop on Inverse Scattering, Aug 2012, Michigan State University.
61. Invited minisymposium speaker, AMS and MAA joint annual meeting, Boston, Jan 4–7, 2012.
62. Invited speaker, Workshop on Geometric Analysis on Euclidean and Homogeneous Spaces, Tufts University, Jan 1–8, 2012.
63. Invited speaker, Mathematical Physics Seminar, Department of Math and Statistics, UNCC, Nov 2011.
64. Invited minisymposium speaker, AMS Western Sectional Meeting, Salt Lake City, Utah, 2011.

65. Invited speaker, 5th Pacific Rim Conference on Mathematics, Stanford University, USA, 2010.
66. BIRS conference on Inverse Transport Theory and Tomography, Banff, Canada, 2010.
67. Invited colloquium speaker, Department of Mathematics, University of Zurich, Switzerland, 2010.
68. Invited colloquium speaker, Department of Mathematics, University of Kansas, Lawrence, USA, 2010.
69. Invited speaker, Applied Math Seminar, Department of Mathematics, University of California, Irvine, USA, 2010.
70. Invited speaker, Applied Math Seminar, Department of Mathematics, University of Texas, Austin, USA, 2009.
71. Invited mini-symposium speaker, SIAM Conference on Mathematical Aspects of Materials Science, May 23-26, 2010, Philadelphia, Pennsylvania, USA.
72. Invited speaker, Applied Math Seminar, Department of Mathematics, Michigan State University, USA, 2009.
73. Invited mini-symposium speaker, SIAM conference on Analysis of Partial Differential Equations, 2009, Miami, Florida, USA.
74. Invited speaker, AMS Mathematics Research Community (MRC) conference on Inverse Problems, Snowbird, Utah, USA, 2009.
75. Invited mini-symposium speaker, *Cloaking and Invisibility*, SIAM Annual Meeting, Denver, Colorado, USA, 2009.
76. Invited mini-course speaker, Morningside Center of Mathematics, Chinese Academy of Sciences, Beijing, China, 2009.
77. Invited colloquium speaker, Department of Mathematics, Shanghai Jiaotong University, Shanghai, China, 2009.
78. Invited colloquium speaker, Institute of Applied Mathematics, Chinese Academy of Sciences, Beijing, China, 2009.
79. Invited speaker, Inverse Problems Seminar, University of Washington, Oct. 2008.
80. Invited speaker, Multiscale Modeling, Analysis, and Simulations, March 27 & 28, 2008, Michigan Center for Industrial and Applied Mathematics, Michigan State University.
81. Invited speaker, Inverse Problems Seminar, University of Washington, Nov. 2007.
82. Invited colloquium speaker, Institute of Mathematics, Chinese Academy of Sciences, Beijing, May, 2007.
83. Invited colloquium speaker, Institute of Computational Mathematics, Chinese Academy of Sciences, Beijing, May, 2007.

84. Invited speaker, Computational Electromagnetism and Acoustics, Feb. 4–10, 2007, Oberwolfach, Germany.
85. Invited speaker, RGC Postgraduate Student Conference on Computer Image & Vision, June 12–15, 2007, Hong Kong.
86. Contributed speaker, The 2nd International Conference on Scientific Computing and Partial Differential Equations & The First East Asia SIAM Symposium, Dec. 2006, Hong Kong.

### **CONFERENCES/SPECIAL SESSIONS/MINISYMPOSIA ORGANIZED**

1. Co-chair, The 3rd East Asia Section of IPIA Young Scholars Symposium, Hong Kong Baptist University, March 17–18, 2018.
2. Co-chair, 3rd Young Scholars Workshop on Inverse Problems, Imaging and PDEs, Jan 12–14, 2018, Southern University of Science and Technology, Shenzhen, China.
3. International Organization Committee, 4<sup>th</sup> International Conference on Analysis and Applied Mathematics (ICAAM), Sept 6–9, 2018, Cyprus, Turkey,
4. Co-chair, Young Scholars Workshop on Inverse Problems, Imaging and PDEs, March 24–26, 2017, Southern University of Science and Technology, Shenzhen, China.
5. International Advisor Board, 3<sup>rd</sup> International Conference on Analysis and Applied Mathematics, Institute of Mathematics and Mathematical Modelling (ICAAM), Sept 7–10, 2016, Almaty, Kazakhstan.
6. Minisymposium co-organizer, “Qualitative and quantitative inverse scattering algorithms”, The 8th International Conference on Inverse Problems and Related Topics, Seoul, Korea, Jun 27–July 1, 2016.
7. Co-chair, First East Asia Symposium of Inverse Problems International Association, Feb 29–March 1, 2016, Shenzhen, China.
8. Organizing Committee, Hong Kong Colloquium on Inverse Problems, Imaging and PDEs, Nov 6, 2015, IAS, HKUST.
9. Minisymposium co-organizer, “Recent advances on inverse scattering problems”, International Congress on Industrial and Applied Mathematics (ICIAM), Beijing, China, Aug 10–14, 2015.
10. Minisymposium co-organizer, “Recent developments on numerical inverse scattering problems”, AIP conference 2015, Helsinki, Finland, May 25–29, 2015.
11. Minisymposium co-organizer, “Analysis and Computation for PDE-based Inverse Problems”, Scientific Computation and Partial Differential Equations (SCPDE 14), Hong Kong, December 8–12, 2014.
12. Minisymposium co-organizer, “Inverse Scattering Problems in Imaging Science”, SIAM Conference on Imaging Science, Hong Kong, May 12–14, 2014.
13. Minisymposium co-organizer, Applied Inverse Problems, Texas A&M University, 2010.

14. Special session organizer, Inverse Problems: Analysis and Computations, AMS & MAA joint annual meeting, San Francisco, USA, 2010.
15. Symposium organizer, Multisymplectic Integrators, International Conference on Scientific Computation and Differential Equations, SciCADE09, Beijing, China, 2009.

## GRADUATE STUDENTS AND POSTDOCS SUPERVISED

1. Hongpeng Sun
  - ◇ PhD completed, 2013, co-supervised with Prof. Zaijiu Shang at Institute of Math, Chinese Academy of Sciences
  - ◇ Associate Professor at Renmin University, Beijing, China, 2016–
2. Changjian Zou
  - ◇ PhD completed, 2014, co-supervised with Prof. Hongkai Zhao at UC Irvine.
  - ◇ Now working in industry
3. Jingni Xiao (PhD at HKBU, 2015–present, expected 2018)
  - ◇ One of the winners of the Yakun Scholarship Scheme for Mainland Postgraduate Students in 2016/2017
  - ◇ Hills Assistant Professor, Rutgers University, USA, 2018–
4. Xiaofei Li (Postdoc, 2016–2017, co-supervised at SUSTC, China)
5. Xinlin Cao (PhD at HKBU, 2016–present)
  - ◇ Awardee of the Hong Kong PhD Fellowship
6. Hongjie Li (PhD at HKBU, 2016–present)
  - ◇ Awardee of the Hong Kong PhD Fellowship
  - ◇ One of the winners of the Yakun Scholarship Scheme for Mainland Postgraduate Students in 2017/2018
7. Shiqi Ma (joint PhD at HKBU and SUSTC, 2016–present)
8. Wing Yan Tsui (PhD at HKBU, 2017–present)

## UNDERGRADUATE STUDENTS SUPERVISED

1. Ke Ren (recipient of SURF Fellowship, Faculty of Science, HKBU); summer research, 2016.
2. Zizhen Song, Keli Guo and Zhongli Jiang (Faculty Advisor); Honorable Mention in Interdisciplinary Contest In Modeling (USA), 2016.
3. Tao Ma (recipient of SURF Fellowship, Faculty of Science, HKBU) and Yuan Ni; summer research, 2015.



## OTHER PROFESSIONAL AND OUTREACH ACTIVITIES

- **Departmental/Faculty/University Services**
  - ◇ Hong Kong Baptist University
    - Associate Head, 2017–
    - Coordinator for Faculty and University Niche Areas, 2017–
    - Research Postgraduate Study Coordinator, 2017–
    - Departmental Management Committee, 2017–
    - Committee Member, Task Force on Science Elite Program, 2014–
    - Committee Member, Undergraduate Summer Research Projects, 2015–
    - Math Department Coordinator, Shenzhen IRACE, 2014–2017
    - Distinguished Lecture/Colloquium/Seminar Coordinator, 2014–2017
    - Math Department Coordinator, Summer PhD Camp, 2014–2017
    - Undergraduates Admissions and Promotion Committee Member, 2014–
  - ◇ University of North Carolina, Charlotte, USA (2011-2014)
    - Advisory Committee, Department of Math and Statistics, UNCC
    - Distinguished Lecture/Colloquium/Seminar Coordinator
    - Committee Member, High School Math Competition
    - Prelim Exam Committee Member for Real Analysis II, UNCC
- **Secretary**, East Asia Section of Inverse Problems International Association, 2016–
- **Reviewer** and **Committee Member** for MPhi and PhD Theses
- **Reviewer** for American Mathematical Society Math Reviews and Zentralblatt MATH
- **Panelist** for the USA NSF, 2013.
- **Referee** for many leading journals and international conferences
- **External Examiner** for many tenures and promotions