

CURRICULUM VITAE

Kui Ren

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Professional Preparation

- Fall 2001–Spring 2006 PhD in Applied Mathematics (with distinction), Columbia University.
Thesis Advisor: Professor Guillaume Bal.
- Fall 1998–Spring 2001 Master of Science, Peking University, P. R. China.
Thesis Advisors: Professors Shida Liu and Zhen-Su She.
- Fall 1994–Spring 1998 Bachelor of Science, Nanjing University, P. R. China.

Appointments

- Fall 2018- Professor, Columbia University, New York, NY.
- Fall 2014- Associate Professor, University of Texas, Austin, TX.
- Fall 2008-Spring 2014 Assistant Professor, University of Texas, Austin, TX.
- Fall 2007-Summer 2008 L. E. Dickson Instructor, University of Chicago, Chicago, IL.
- Spring 2006-Summer 2007 Postdoctoral Research Associate/ Adjunct Assistant Professor in Applied Mathematics, Columbia University, NY.

Visiting Positions

- Fall 2017 Research Fellow, Institute for Computational and Experimental Research in Mathematics (ICERM), Brown University. ICERM Program: “Mathematical and Computational Challenges in Radar and Seismic Reconstruction”.
- Fall 2013 Research Fellow, Institute of Pure and Applied Mathematics (IPAM), UCLA. IPAM Program: “Materials for a Sustainable Energy Future”.
- Fall 2003 Research Fellow, Institute of Pure and Applied Mathematics (IPAM), UCLA. IPAM Program: “Inverse Problems: Computational Methods and Emerging Applications”.

Research Interests

(i) Inverse Problems and Imaging: Inverse Boundary Value Problems, Hybrid/Multi-physics Inverse Problems, Imaging in Random Media; (ii) Random Graphs: Graph Limits, Modeling of Complex Networks, Community Detection; (iii) Scientific Computing: Fast Algorithms for PDEs, Numerical Optimization; (iv) Kinetic Modeling and Simulation: Wave and Particle Transport in Complex Media, Semiconductor Modeling.

Teaching Experiences

@ Columbia University (Fall 2018–):

- (a) Undergraduate courses: (i) “E4204x: Functions of a Complex Variable” (Fall 2018).

@ University of Texas at Austin (Fall 2008–Spring 2018):

- (a) Undergraduate courses: (i) “M310T: Introduction to Statistical and Scientific Computation” (Fall 2009, Fall 2010, Fall 2011), (ii) “M346: Applied Linear Algebra” (Spring 2010, Fall 2016), (iii) “M348: Numerical Analysis in Scientific Computing” (Spring 2016), (iv) “M361K: Introduction to Real Analysis” (Summer 2015), (v) “M362K: Probability I” (Summer 2010, Fall 2012-a, Fall 2012-b, Summer 2013), (vi) “M365C: Real Analysis I” (Spring 2011, Spring 2012, Fall 2014, Fall 2015, Spring 2018-a, Spring 2018-b), (vii) “M365D: Real Analysis II” (Spring 2017) and (viii) “M427K: Advanced Calculus for Applications I - Differential Equations” (Fall 2008, Spring 2009).
- (b) Graduate courses: (i) “ECO392M: Real Analysis with Economics Applications” (Summer 2013, Summer 2014), (ii) “M393C: Inverse Problems” (Spring 2013, Spring 2016), (iii) “M397C: Iterative Methods” (Spring 2014), and (iv) “M381C: Real Analysis” (Fall 2016).
- (c) Undergraduate and graduate conference/research courses: (i) M175 (“Topics in Analysis”, Spring 2010; “Inverse Problems”, Fall 2010; “Modern Algebra”, Spring 2011; “Mathematics of Signal Processing”, Summer 2012), (ii) M375 (“Real Analysis II”, Spring 2011; “Mathematical Physics”, Fall 2011; “Introduction to Monte Carlo Methods”, Fall 2013), (iii) M475 (“Inverse Problems”, Spring 2011; “Advanced Linear Algebra”, Fall 2015); (iv) “M391C (Analysis of Inverse Problems, Summer 2011, Spring 2012), (v) “M393C (Inverse Problems and Imaging, Spring 2011, Fall 2011, Spring 2012, Summer 2012, Fall 2012, Spring 2013, Summer 2013, Summer 2014, Fall 2014, Spring 2015), (vi) “M397C (Numerical Analysis, Fall 2011, Fall 2012, Fall 2014).

@ University of Chicago (Fall 2007–Summer 2008): Teaching of undergraduate course “Introduction to Computer Science”.

@ Columbia University (Fall 2001– Summer 2007): Teaching of graduate course “Introduction to Computational Methods for Inverse Problems”. Teaching Assistant for undergraduate courses on “Partial Differential Equations”, “Functions of Complex Variables” and “AQF Project for Creating a University Center for Scientific Computing”.

Awards and Honors

- 2017 Calderón Prize, Inverse Problems International Association.
- 2016 The publication *Ding, Ren, & Vallélian, Inverse Problems, 095005, 2015* is chosen by the journal *Inverse Problems* for its “Highlights of 2015” collection *on the basis of referee endorsement, novelty and scientific impact*.
- 2014-2015 Moncrief Grand Challenge Award, The University of Texas at Austin.

- 2014 MediaV Young Researcher Award, International Conference Series on Inverse Problems and Related Topics and the MediaV Information Technology Co Ltd.
- 2013 The publication *Bal & Ren, Inverse Problems, 025010, 2012* is chosen by the journal *Inverse Problems* for its “Highlights of 2012” collection *on the basis of referee endorsement, novelty and scientific impact*.
- 2009-2010 Faculty Development Award, The University of Texas at Austin.
- 2006 The Robert Simon Memorial Prize for “*the Most Outstanding Doctoral Dissertation*”. APAM, Columbia University.
- 2002 The Extraordinary Teaching Assistant Award for “*Exceptional Efforts as a Teaching Assistant and Excellence in Undergraduate Education*”. Fu Foundation School of Engineering and Applied Sciences, Columbia University.

Research Grants

- 2016-2019 National Science Foundation, Grant DMS-1620473, Principle Investigator, \$238,956
.
- 2013-2016 National Science Foundation, Grant DMS-1321018, Principle Investigator, \$259,565
.
- 2009-2013 National Science Foundation, Grant DMS-0914825, Principle Investigator, \$180,584
.

Conferences/Workshops/Minisymposia Organized

- [O17] January 2019, Co-Organizer, *Special Session on Recent Advances in Inverse Problems and Imaging*, Joint Mathematical Meetings, Baltimore, MD.
- [O16] September 2017, Co-Organizer, *Workshop on Waves and Imaging in Random Media*, ICERM, Brown University, RI.
- [O15] May 2017, Co-Organizer, *Minisymposium on Inverse Problems in Scattering and Imaging*, Applied Inverse Problems Conference (AIP), Hangzhou, China.
- [O14] March 2017, Co-Organizer, *Minisymposium on Numerical Methods for Forward and Inverse Problems of Radiative Transport Equations*, SIAM Conference on Computational Sciences and Engineering, Atlanta, GA.
- [O13] January 2017, Co-Organizer, *SIAM Special Session on Recent Developments in Computational Inverse Problems and Imaging*, Joint Mathematical Meetings, Atlanta, GA.
- [O12] May 2016, Co-Organizer, *Minisymposium on Recent Developments in Hybrid Inverse Problems and Imaging*, SIAM Conference on Imaging Science, Albuquerque, New Mexico.
- [O11] December 2014, Co-Organizer, *Minisymposium on Computational Inverse Scattering Problems and Applications in Imaging*, International Conference on Inverse Problems and Related Topics, Taiwan.
- [O10] May 2014, Co-Organizer, *Minisymposium on Inverse Scattering Problems in Imaging Science*, SIAM Conference on Imaging Science, Hong Kong.

- [O9] July 2013, Co-Organizer, *Minisymposium on Inverse Problems for Wave Propagation in Complex and Random Environments*, Applied Inverse Problems Conference (AIP 2013), Daejeon, Korea.
- [O8] June 2013, Program Committee, *SAMSI Summer Program on Neuroimaging Data Analysis*, Statistical and Applied Mathematical Sciences Institute, NC.
- [O7] May 2011, Organizer, *Minisymposium on New Applications of Inverse Scattering Theory*, Applied Inverse Problems Conference (AIP 2011), College Station, TX.
- [O6] May 2011, Co-Organizer, *Minisymposium on Recent Developments of Reconstruction Methods for Inverse Medium Problems*, Applied Inverse Problems Conference (AIP 2011), College Station, TX.
- [O5] May 2010, Organizer, *Special Session Inverse Problems and Imaging*, International Conference on Computational and Mathematical Methods in Science and Engineering, University of Wisconsin, Madison, WI.
- [O4] January 2010, Co-organizer, *AMS Special Session on Inverse Problems: Analysis and Computation*, Joint Mathematical Meetings, San Francisco, CA.
- [O3] March 2009, Co-organizer, *Minisymposium Inverse Transport Computations and Medical Imaging Applications*, SIAM Conference on Computational Science and Engineering, Miami, FL.
- [O2] November 2008, International Program Committee, *The Huangguoshu International Interdisciplinary Conference on Biomedical Mathematics: Promising Directions in Imaging, Therapy Planning and Inverse Problems*, Anshun, Guizhou, China.
- [O1] May 2007, Co-organizer, *Workshop on Inverse Problems*, Columbia University, New York, NY.

Invited Presentations

- [T127] October 2018, **Minisymposium Speaker**, *Minisymposium on Computational Methods for Waves in Complex Media*, SIAM TEX-LA Sectional Meeting, Baton Rouge, LA.
- [T126] October 2018, **Minisymposium Speaker**, *Minisymposium on Inverse Problems and Imaging*, SIAM TEX-LA Sectional Meeting, Baton Rouge, LA.
- [T125] September 2018, **Invited Speaker**, *Workshop on Qualitative and Quantitative Approaches to Inverse Scattering Problems*, Institute for Mathematical Sciences, National University of Singapore, Singapore.
- [T124] September 2018, **Applied Mathematics Colloquium**, Duke University, Durham, NC.
- [T123] August 2018, **Invited Speaker**, *Workshop on Mathematical and Computational Challenges of Medical Imaging and Inverse Problems*, Shanghai, China.
- [T122] June 2018, **Invited Speaker**, *Forum on Scientific and Engineering Computing*, Institute of Computational Mathematics, Chinese Academy of Sciences, Beijing.
- [T121] March 2018, **Invited Speaker**, *Workshop on Inverse Problems, Imaging and PDE*, Hong Kong University of Science and Technology, Hong Kong.
- [T120] January 2018, **Applied Mathematics Colloquium**, Columbia University, New York, NY.
- [T119] January 2018, **Statistics Colloquium**, University of Chicago, Chicago, IL.

- [T118] December 2017, **Plenary Speaker**, *International Conference on Recent Advances in Computational and Applied Mathematics*, Wuhan University, Wuhan, China.
- [T117] December 2017, **Minisymposium Speaker**, Minisymposium on *Waves and Imaging Through Complex Media*, SIAM Conference on Analysis of Partial Differential Equations, Baltimore, MD.
- [T116] November 2017, **Invited Speaker**, Workshop on *Problèmes Inverses Plasmoniques-Opérateur de Neumann-Poincaré*, Université Grenoble Alpes, France.
- [T115] September 2017, **Invited Speaker**, KI-Net Conference on *Kinetic Equations: Modeling, Analysis and Numerics*, Austin, TX.
- [T114] July 2017, **Invited Speaker**, Workshop on *Quantitative Tomographic Imaging-Radon meets Bell and Maxwell*, Johann Radon Institute for Computational and Applied Mathematics (RICAM), Linz, Austria.
- [T113] June 2017, **Applied Mathematics Seminar**, Institute of Computational Mathematics and Scientific/Engineering Computing, Chinese Academy of Sciences, Beijing.
- [T112] May 2017, **Calderón Lecture**, Applied Inverse Problems Conference (AIP 2017), Hangzhou, China.
- [T111] May 2017, **Minisymposium Speaker**, Minisymposium on *Inverse problems in Quantitative Optical and Electrical Tomography*, Applied Inverse Problems Conference (AIP 2017), Hangzhou, China.
- [T110] May 2017, **Invited Speaker**, Workshop on *Computational Inverse Problems for Partial Differential Equations*, Mathematisches Forschungsinstitut Oberwolfach, Germany.
- [T109] March 2017, **Applied Mathematics Colloquium**, Rice University, Houston, TX.
- [T108] March 2017, **Applied and Computational Mathematics Seminar**, Georgia Institute of Technology, Atlanta, GA.
- [T107] March 2017, **Minisymposium Speaker**, Minisymposium on *Numerical Simulation of Optical and Plasmonic Phenomena*, SIAM Conference on Computational Science and Engineering, Atlanta, GA.
- [T106] February 2017, **Invited Speaker**, Workshop on *Optical Imaging and Inverse Problems*, IMA, University of Minnesota, MN.
- [T105] February 2017, **Scientific and Statistical Computing Seminar**, University of Chicago, Chicago, IL.
- [T104] December 2016, **Invited Speaker**, HKUST-IAS Workshop on *Inverse Problems, Imaging and PDEs*, Hong Kong, China.
- [T103] November 2016, **Applied Mathematics Colloquium**, Columbia University, New York, NY.
- [T102] November 2016, **Applied Mathematics Seminar**, University of Illinois, Chicago, IL.
- [T101] October 2016, **Invited Speaker**, KI-Net Workshop on *Mean-field Modeling and Multiscale Methods for Complex Physical and Biological Systems*, University of California, Santa Barbara, CA.
- [T100] August 2016, **Invited Speaker**, *International Conference on Computational Mathematics and Inverse Problems*, Houghton, MI.

- [T99] July 2016, **Invited Speaker**, *SIAM-NSF Workshop on Optics and Photonics*, Boston, MA.
- [T98] July 2016, **Minisymposium Speaker**, Minisymposium on *Direct and Inverse Scattering in Electromagnetics and Optics*, SIAM Annual Conference, Boston, MA.
- [T97] May 2016, **Minisymposium Speaker**, Minisymposium on *Inverse Problems in Neuroimaging*, SIAM Conference on Imaging Science, Albuquerque, NM.
- [T96] May 2016, **Minisymposium Speaker**, Minisymposium on *Wave-Based Imaging in Complex Media*, SIAM Conference on Imaging Science, Albuquerque, NM.
- [T95] April 2016, **Invited Speaker**, *Texas Consortium for Computational Seismology Spring Meeting*, Houston, TX.
- [T94] November 2015, **Invited Speaker**, KI-Net Workshop on *Analysis and Computation in Kinetic Theory*, Stanford University, CA.
- [T93] August 2015, **Invited Speaker**, *International Conference on Numerical Mathematics and Scientific Computing*, Nanjing, China.
- [T92] August 2015, **Minisymposium Speaker**, Minisymposium on *Optimality in Reduced Order Modeling and Inversion*, The 8th International Congress of Industrial and Applied Mathematics (ICIAM), Beijing, China.
- [T91] August 2015, **Minisymposium Speaker**, Minisymposium on *Waves and Tomography in Geosciences and Medical Imaging*, The 8th International Congress of Industrial and Applied Mathematics (ICIAM), Beijing, China.
- [T90] August 2015, **Minisymposium Speaker**, Minisymposium on *Computational Inverse Problems*, The 8th International Congress of Industrial and Applied Mathematics (ICIAM), Beijing, China.
- [T89] July 2015, *Inverse Problems Seminar*, Institute for Applied Mathematics, Chinese Academy of Sciences, Beijing, China.
- [T88] June 2015, **Invited Speaker**, BIRS Workshop on *Hybrid Methods in Imaging*, Banff, Calgary, Canada.
- [T87] May 2015, **Minisymposium Speaker**, Minisymposium on *Imaging Using Light: From Theory to Application*, Applied Inverse Problems Conference (AIP 2015), Helsinki, Finland.
- [T86] May 2015, **Minisymposium Speaker**, Minisymposium on *Recent Developments on Numerical Inverse Scattering Problems*, Applied Inverse Problems Conference (AIP 2015), Helsinki, Finland.
- [T85] May 2015, **Minisymposium Speaker**, Minisymposium on *Reconstruction Methods for Inverse Problems*, Applied Inverse Problems Conference (AIP 2015), Helsinki, Finland.
- [T84] April 2015, *Inverse Problems Seminar*, Colorado State University, Fort Collins, CO.
- [T83] March 2015, *Applied and Computational Mathematics Seminar*, Michigan State University, East Lansing, MI.
- [T82] December 2014, **MediaV Lecture**, *International Conference on Inverse Problems and Related Topics*, Taipei, Taiwan.
- [T81] December 2014, **Minisymposium Speaker**, Minisymposium on *Analysis and Computation for PDE-Based Inverse Problems*, The 5th International Conference on Scientific Computing and Partial Differential Equations, Hong Kong.

- [T80] October 2014, *Geophysical Society of Houston Research Seminar*, WesternGeco-Schulumberger Reserach Center, Houston, TX.
- [T79] July 2014, **Minisymposium Speaker**, Minisymposium on *Numerical Methods for Direct, Inverse and Optimal Design Problems in Wave Propagation*, SIAM Annual Conference, Chicago, IL.
- [T78] July 2014, **Minisymposium Speaker**, Session on *Micro- and Nano-scale Flows and Devices*, The 29th International symposium on Rarefied Gas Dynamics, Xi'An, China.
- [T77] May 2014, **Minisymposium Speaker**, Minisymposium on *Wave-Based Imaging*, SIAM Conference on Imaging Sciences, Hong Kong.
- [T76] May 2014, **Minisymposium Speaker**, Minisymposium on *Photoacoustic Tomography*, SIAM Conference on Imaging Sciences, Hong Kong.
- [T75] March 2014, **Minisymposium Speaker**, Special Session on *Novel Developments in Tomography and Applications*, AMS Spring Eastern Sectional Meeting, Baltimore, MD.
- [T74] March 2014, *Applied Mathematics Seminar*, Auburn University, Auburn, AL.
- [T73] February 2014, *ICES Seminar*, Institute for Computational Science and Engineering, University of Texas, Austin, TX.
- [T72] December 2013, **Invited Speaker**, Workshop on *Interdisciplinary Applied and Computational Mathematics*, Zhejiang University, Hangzhou, China.
- [T71] December 2013, **Invited Speaker**, *Culminating Workshop for the IPAM Program on Materials for a Sustainable Energy Future*, Lake Arrowhead, CA.
- [T70] November 2013, *Applied Mathematics/PDE Seminar*, University of California, Santa Barbara, CA.
- [T69] October 2013, *Applied Mathematics Seminar*, University of California, Irvine, CA.
- [T68] October 2013, **Minisymposium Speaker**, Special Session on *Applied Analysis and Inverse Problems*, AMS Fall Southeastern Sectional Meeting, Louisville, KY.
- [T67] July 2013, **Minisymposium Speaker**, Minisymposium on *Computational Methods for Medical Imaging*, SIAM Annual Meeting 2013, San Diego, CA.
- [T66] July 2013, **Minisymposium Speaker**, Minisymposium on *Photoacoustic Tomography*, SIAM Annual Meeting 2013, San Diego, CA.
- [T65] July 2013, **Minisymposium Speaker**, Minisymposium on *Inverse Transport Problems*, Applied Inverse Problems Conference (AIP 2013), Daejeon, Korea.
- [T64] June 2013, **Minisymposium Speaker**, Special Session on *Inverse Problems*, Pacific Rim Mathematical Association (PRIMA) Congress, Shanghai, China.
- [T63] June 2013, **Invited Speaker**, *The Second International Conference on Interdisciplinary Applied and Computational Mathematics*, Zhejiang University, Hangzhou, China.
- [T62] April 2013, *Mathematics Colloquim*, Rensselaer Polytechnic Institute, Troy, NY.
- [T61] March 2013, **Invited Speaker**, Workshop on *Multiscale Modeling, Analysis, and Computation of Nano-Optics*, Michigan State University, MI.
- [T60] January 2013, **Invited Speaker**, Workshop on *Coupled Physics Inverse Problems*, Center for Mathematical Modeling, Santiago, Chile.

- [T59] November 2012, *Applied Mathematics Seminar*, University of Texas at Arlington, Arlington, TX.
- [T58] October 2012, **Invited Speaker**, Workshop on *Computational Inverse Problems*, Mathematisches Forschungsinstitut Oberwolfach, Germany.
- [T57] September 2012, **Invited Speaker**, *International Conference on Inverse Problems and Applications*, Zhejiang University, Hangzhou, China.
- [T56] August 2012, *Applied Mathematics Seminar*, Shanghai Jiaotong University, Shanghai, China.
- [T55] August 2012, **Invited Speaker**, *International Conference on Inverse Problems and PDE Control*, Sichuan University, Chengdu, China.
- [T54] July 2012, **Minisymposium Speaker**, Minisymposium on *Scattering and Inverse Scattering on Optics*, SIAM Annual Meeting, Minneapolis, MN.
- [T53] July 2012, **Minisymposium Speaker**, Minisymposium on *Mathematical Novelties in Inverse Problems in Imaging Sciences*, The 9th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Orlando, FL.
- [T52] June 2012, **Minisymposium Speaker**, Minisymposium on *Hybrid Methods (Multi-Physics, Multi-Wave) in Medical Imaging*, Conference on Inverse Problems in Honor of Gunther Uhlmann, Irvine, CA.
- [T51] April 2012, *Mathematical Physics Seminar*, University of Texas, Austin, TX.
- [T50] October 2011, *Applied Mathematics Seminar*, University of North Carolina, Charlotte, NC.
- [T49] October 2011, **Invited Speaker**, Workshop on *Applications of Kinetic Theory and Computation*, ICERM, Brown University, Providence, RI.
- [T48] September 2011, **Invited Speaker**, *The Second Research Meeting of the Texas Consortium for Computational Seismology*, Austin, TX.
- [T47] September 2011, **Invited Speaker**, Workshop on *Splitting and Multiscale Methods for Computational PDEs*, Waco, TX.
- [T46] August 2011, **Invited Speaker**, International Workshop on *Recent Advances in Biomedical Imaging*, Shanghai Jiaotong University, Shanghai, China.
- [T45] July 2011, **Minisymposium Speaker**, Minisymposium on *Recent Advances in Inverse Problems for Partial Differential Equations*, International Congress on Industrial and Applied Mathematics (ICIAM 2011), Vancouver, British Columbia, Canada.
- [T44] July 2011, **Minisymposium Speaker**, Minisymposium on *Multiscale Phenomena in Calculus of Variations and Inverse Problems*, International Congress on Industrial and Applied Mathematics (ICIAM 2011), Vancouver, British Columbia, Canada.
- [T43] June 2011, **Minisymposium Speaker**, Minisymposium on *Hybrid Inverse Problems*, Fields-MITACS Conference on Mathematics of Medical Imaging, Toronto, Canada.
- [T42] June 2011, **Minisymposium Speaker**, Minisymposium on *Electromagnetic Wave Propagation in Complex Media*, International Conference on Interdisciplinary Applied and Computational Mathematics, Hangzhou, China.
- [T41] May 2011, **Invited Speaker**, *DoD Workshop on Applied Mathematics and Imaging*, Edinburg, TX.

- [T40] May 2011, **Minisymposium Speaker**, Minisymposium on *Identification of Distributed Parameters: Stability and Numerics*, Applied Inverse Problems Conference (AIP 2011), College Station, TX.
- [T39] May 2011, **Minisymposium Speaker**, Minisymposium on *Cloaking and Invisibility*, Applied Inverse Problems Conference (AIP 2011), College Station, TX.
- [T38] March 2011, *Mathematics Colloquium*, University of Texas at Austin, Austin, TX.
- [T37] March 2011, *Inverse Problems and Imaging Seminar*, University of California, Irvine, CA.
- [T36] December, 2010, *Applied Mathematics Seminar*, University of Utah, Salt Lake City, UT.
- [T35] November, 2010, Workshop on *Inverse Problems-Theory and Applications*, Mathematical Science Research Institute (MSRI), University of California, Berkeley, CA.
- [T34] October 2010, *Mathematics Colloquium*, Baylor University, Waco, TX.
- [T33] October 2010, *Applied and Computational Mathematics Colloquium*, Rice University, Houston, TX.
- [T32] May 2010, **Minisymposium Speaker**, Special Session on *Inverse Problems and Imaging*, International Conference on Computational and Mathematical Methods in Science and Engineering, Madison, WI.
- [T31] May 2010, **Invited Speaker**, BIRS Workshop on *Inverse Transport Theory and Tomography*, Banff, British Columbia, Canada.
- [T30] May 2010, *DOE Applied Mathematics Program Meeting*, San Francisco, CA.
- [T29] April 2010, **Invited Speaker**, MCIAM workshop on *Inverse Problems: Theory, Computation, and Applications*, Michigan State University, East Lansing, MI.
- [T28] April 2010, *Third-Generation Solar Technologies Multidisciplinary Workshop at MRS 2010 Spring Meeting*, San Francisco, CA.
- [T27] October 2009, **Invited Speaker**, Workshop on *Analytical and Numerical Issues on Quantum, Kinetic and Statistical Evolution*, University of Texas, Austin, TX.
- [T26] July 2009, **Invited Speaker**, *Annual Workshop of China Ministry of Education Key Laboratory of Statistics and Information Technology*, Peking University, Beijing, China.
- [T25] July 2009, **Minisymposium Speaker**, Minisymposium on *New Developments in Optical Tomography*, Applied Inverse Problems Conference (AIP 2009), Vienna, Austria.
- [T24] July 2009, **Minisymposium Speaker**, *Section on Inverse Problems*, SIAM Annual Meeting, Denver, CO.
- [T23] March 2009, **Minisymposium Speaker**, Minisymposium on *Inverse Transport Computations and Medical Imaging Applications*, SIAM Conference on Computational Science and Engineering, Miami, FL.
- [T22] January 2009, *Applied and Computational Mathematics Seminar*, University of California, Irvine, CA.
- [T21] November 2008, *Mathematical Physics Seminar*, University of Texas, Austin, TX.
- [T20] November 2008, **Plenary Speaker**, *The Huangguoshu International Interdisciplinary Conference on Biomedical Mathematics*, Anshun, Guizhou, China.

- [T19] August 2008, **Invited Speaker**, Workshop on *Multiscale Modeling and Analysis*, University of Texas, Austin, TX.
- [T18] July 2008, *International Conference on Modeling and Simulation 2008 (ICMS08)*, Xi'an, Shanxi, China.
- [T17] June 2008, **Invited Speaker**, *Summer School on Inverse Problems in Radiative Transport*, University of California, Merced, CA.
- [T16] May 2008, **Minisymposium Speaker**, Session on *Optimization with PDE Constraints*, SIAM Conference on Optimization, Boston, MA.
- [T15] November 2007, *Applied and Computational Mathematics Seminar*, University of California, Irvine, CA.
- [T14] October 2007, *Numerical Analysis Seminar*, University of Texas, Austin, TX.
- [T13] September 2007, **Invited Speaker**, Conference on *Advances in Scientific Computing*, Chicago, IL.
- [T12] June 2007, *Applied Inverse Problems: Theoretical and Computational Aspects (AIP 2007)*, Vancouver, Canada.
- [T11] June 2007, **Invited Speaker**, *Summer School on Inverse Problems in Radiative Transfer*, University of Washington, Seattle, WA.
- [T10] April 2007, *Computer Science Colloquium*, University of Chicago, Chicago, IL.
- [T9] April 2007, *APAM Research Conference*, Columbia University, New York, NY.
- [T8] January 2007, **Minisymposium Speaker**, Symposium on *Inverse Problems Honoring Alberto Calderón* IMPA, Rio de Janeiro, Brazil.
- [T7] February 2006, *Mathematics Colloquium*, University of Central Florida, Orlando, FL.
- [T6] July 2005, **Minisymposium Speaker**, Section on *Inverse Problems*, the Eighth U.S. National Congress on Computational Mechanics, Austin, TX.
- [T5] June 2005, **Invited Speaker**, *IPAM Workshop on Inverse Problems*, Lake Arrowhead, Los Angeles, CA.
- [T4] April 2005, *APAM Research Conference*, Columbia University, New York, NY.
- [T3] January 2005, **Minisymposium Speaker**, *Session on Biomedical Optics*, The International Society for Optical Engineering (SPIE), San Jose, CA.
- [T2] April 2004, **Minisymposium Speaker**, *Session on Biomedical Optics*, Topical Meeting of Optical Society of American(OA), Miami, FL.
- [T1] December 2003, **Invited Speaker**, *IPAM Workshop on Inverse Problems*, Lake Arrowhead, Los Angeles, CA.

Invited Short-Courses and Tutorials

- [S4] July 2015, Six lectures on *Computational Inverse Problems*, Graduate Summer School on Scientific Computing, LSEC, Chinese Academy of Sciences, Beijing, China.
- [S3] January 2012, Four lectures on *Pan American Advanced Studies Institute (PASI) Summer School on Inverse Problems and PDE Control*, Santiago, Chile.

[S2] August 2011, Five lectures on *Summer School on Medical Imaging and Applications*, Shanghai Jiaotong University, Shanghai, China.

[S1] July-August 2009, Graduate Course on Inverse Problems (4 weeks) in *National Graduate Summer School on Mathematics*, Peking University, Beijing, China.

Professional Memberships

[PM-1] Member, Society for Industrial and Applied Mathematics (SIAM); Member, SIAG on Imaging Science

Professional Services

[PS-1] Member of Editorial Board: *Inverse Problems*, 2017-.

[PS-2] Reviewer/Panelist for the US National Science Foundation, the US Department of Energy, the European Research Council.

[PS-3] Reviewer for over 50 journals in mathematics/physics/engineering.

LIST OF PUBLICATIONS

Kui Ren

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Preprints/Submitted

- [P49] C. Radin, K. Ren, and L. Sadun. Surface effects in dense random graphs with sharp edge constraint. *arXiv:1709.01036*, 2017
- [P48] K. Ren and S. Vallélian. Characterizing impacts of model inaccuracies in photoacoustic tomography. *Submitted*, 2017
- [P47] C. Frederick, K. Ren, and S. Vallélian. Image reconstruction in quantitative PAT with the simplified P_2 approximation. *arXiv:1805.05325*, 2018
- [P46] K. Ren, R. Zhang, and Y. Zhong. A fast algorithm for radiative transport in isotropic media. *arXiv:1610.00835*, 2016

Refereed Journal Papers/Book Chapters

- [P45] K. Ren and F. Triki. A global stability estimate for the photoacoustic inverse problem in layered media. *Euro. J. Appl. Math.*, 29, 2018
- [P44] Y. Zhong, K. Ren, and R. Tsai. An implicit boundary integral method for computing electric potential of macromolecules in solvent. *J. Comput. Phys.*, 359:199–215, 2018
- [P43] P. Bardsley, K. Ren, and R. Zhang. Quantitative photoacoustic imaging of two-photon absorption. *J. Biomed. Opt.*, 23, 2018. 016002
- [P42] C. Radin, K. Ren, and L. Sadun. A symmetry breaking transition in the edge/triangle network model. *Ann. Inst. H. Poincaré D*, 5:251–286, 2018
- [P41] R. Kenyon, C. Radin, K. Ren, and L. Sadun. The phases of large networks with edge and triangle constraints. *J. Phys. A: Math. Theor.*, 50, 2017. 435001
- [P40] R. Kenyon, C. Radin, K. Ren, and L. Sadun. Multipodal structures and phase transitions in large constrained graphs. *J. Stat. Phys.*, 168:233–258, 2017
- [P39] K. Ren and R. Zhang. Nonlinear quantitative photoacoustic tomography with two-photon absorption. *SIAM J. Appl. Math.*, 78:479–503, 2018
- [P38] M. Harmon, I. M. Gamba, and K. Ren. Numerical algorithms based on Galerkin methods for the modeling of reactive interfaces in photoelectrochemical (PEC) solar cells. *J. Comput. Phys.*, 327:140–167, 2016
- [P37] K. Ren, R. Zhang, and Y. Zhong. Inverse transport problems in quantitative PAT for molecular imaging. *Inverse Problems*, 31, 2015. 125012

- [P36] Y. He, I. M. Gamba, H. C. Lee, and K. Ren. On the modeling and simulation of reaction-transfer dynamics in semiconductor-electrolyte solar cells. *SIAM J. Appl. Math.*, 75:2515–2539, 2015
- [P35] R. Kenyon, C. Radin, K. Ren, and L. Sadun. Bipodal structure in oversaturated random graphs. *Int. Math. Res. Notices*, 2016, 2016. rrw261
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Dissertations

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