

CURRICULUM VITAE

HAO-MIN ZHOU
SCHOOL OF MATHEMATICS
GEORGIA INSTITUTE OF TECHNOLOGY

JANUARY, 2011

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Areas of Research Interest

- Numerical analysis and scientific computing.
- Computations of partial differential equations and stochastic differential equations.
- Wavelets and PDE based image processing.
- Level set methods.
- Random dynamical systems.

Education

- Ph.D., Applied Mathematics, University of California, Los Angeles, U.S.A., June, 2000 (Thesis advisor: Professor Tony F. Chan. Title of thesis: *Wavelet Transforms and PDE Techniques in Image Compression*).
- M.Phil., Mathematics, The Chinese University of Hong Kong, Hong Kong, August, 1996
- M.S., Applied Mathematics,
 - The University of California, Los Angeles, June, 1998.
 - Peking University, Beijing, China, July, 1994
- B.S., Pure Mathematics, Peking University, Beijing, China, July, 1991.

Academic Positions

- Associate Professor, School of Mathematics, Georgia Institute of Technology, 2008 – present.
- Assistant Professor, School of Mathematics, Georgia Institute of Technology, 2003 – 2008.
- Postdoctoral Scholar and von Kármán instructor, Applied and Computational Mathematics Department, California Institute of Technology, July, 2000 – August, 2003.
- Postdoctoral Scholar, Core Participant in Geometrically Based Motions Program, Institute for Pure and Applied Mathematics, UCLA, March, 2001 – June, 2001.

Professional Experience

- School of Mathematics, Georgia Institute of Technology, August 2003–present. Courses taught: Stochastic Processes I, Linear algebra, Calculus II, Differential Equations, Math Methods in Applied Science, Iterative Methods for Systems of Equations, Numerical Analysis I, Numerical Linear Algebra, Numerical Methods for ODE's, Numerical Methods in Finance, Industrial Mathematics, Numerical Methods for PDE's.
- Instructorship at Applied and Computational Mathematics Department, California Institute of Technology, Jan. 2001 – Sept. 2002. Courses taught: Numerical Analysis (a three-quarter graduate courses, including Approximation Theory and Numerical ODE's, Numerical Linear Algebra, Numerical PDE's).
- Summer internship at Level Set Systems, Inc., developed code for “Level set based image processing”, 1999.
- Graduate research assistant at the University of California, Los Angeles, 1996 – 2000.
- Graduate teaching assistant at
 - The University of California, Los Angeles, during the academic years 1997 – 1998, and 1998 – 1999. Undergraduate courses taught: Linear Algebra, Numerical Analysis and Program in Computing (intermediate programming in C++).
 - The Chinese University of Hong Kong, during the academic years 1994 – 1996. Undergraduate courses taught: Numerical Analysis, Linear Programming, Dynamic Programming, Mathematical Softwares in Scientific Computing.
 - Peking University, Beijing, China, during the academic years 1991 – 1992. Undergraduate courses taught: Calculus, Linear Algebra.

Awards and Grants

- NSF Grant: *(Lead) ATD: Collaborative Research: Multiscale and Stochastic Methods for Inverse Source Problems and Signal Analysis*, awarded by NSF DMS and DTRA, Award # 1042998, jointly with Yang Wang at Michigan State University and Peijun Li at Purdue University. Total Amount: \$582,984, as the lead, GT gets \$241,898, Starting date: Sept 1, 2010.
- NSF Faculty Early Career Development (CAREER) Award: *Computing Information in Image Processing and Stochastic Differential Equations*, awarded by NSF DMS, Award #0645266, Total Amount \$401,824,00, starting date: July 1, 2007.
- NSF Grant: *PDE Techniques in Wavelet Based Image Processing*, awarded by NSF DMS-Computational Mathematics, Award #0410062, Total Amount: \$157,119.00, Starting date: September 1, 2004.
- Senior personal on the following grants:
 - DHS and NSF grant: Foundations of Data and Visual Analysis (FODAVA), PI:Haesun Park (CSE, Georgia Tech).
- Honorable Mention in Householder Award XI(2002), awarded by the Householder Prize Committee, for Ph.D dissertation *Wavelet Transforms and PDE Techniques in Image Compression*, written at UCLA under the supervision of Professor Tony Chan.
- Guang Hua award, 1990, Peking University.
- Jiu Zhang award, 1992, Peking University.

Patents

- (1) U.S. Provisional Patent Application for *Efficient Modeling of Spatially Incoherent Sources based on Wiener Chaos Expansion Method*, with A. Adibi, M. Badieirostami and Shui-Nee Chow.
- (2) U.S. Patent Ser No. 7031538 (Application No. 09/737,834) for *Method and Apparatus for Feature Based Quantization and Compression of Data*, with L.T. Cheng, B. Merriman, S. Osher and H. Zhao.

Journal and Invited Publications

- (1) S.-N. Chow, W. Li, Z. Liu and H. M. Zhou, *A Natural Order in Dynamical Systems Based on Conley-Markov Matrices*, Submitted to Journal on Differential Equations.
- (2) S.-N. Chow, W. Huang, Y. Li and H. M. Zhou, *A Free Energy Based Mathematical Study for Molecular Motors*, Accepted by Regular and Chaotic Dynamics.
- (3) S.-N. Chow, W. Huang, Y. Li and H. M. Zhou, *Fokker-Planck Equations for a Free Energy Functional or Markov Process on a Graph*, submitted to Archive for Rational Mechanics and Analysis.
- (4) G. Bao, S. N. Chow, P Li and H. M. Zhou, *An Inverse Random Source Problem for the Helmholtz Equation*, submitted to AMS Mathematics of Computation.
- (5) S. Lee, H. M. Zhou and D. Baldwin, *A Numerical Study of Void Nucleation and Growth in a Flip Chip Assembly Process*, Modelling and Simulation in Materials Science and Engineering, 18 (2010) 065005. doi: 10.1088/0965-0393/18/6/065005.
- (6) R. Goroshin, Q. Huynh and H. M. Zhou, *Approximate Solution to Several Visibility Optimization Problems*, Accepted by Communications in Mathematical Sciences.
- (7) G. Bao, S. N. Chow, P Li and H. M. Zhou, *Numerical Solution of an Inverse Medium Scattering Problem with a Stochastic Source*, Inverse Problems Vol. 26 No. 07, 074014, 2010. doi: 10.1088/0266-5611/26/7/074014
- (8) C. Y. Lee, B. L. Rozovskii, H. M. Zhou, *Randomization of Forcing in Large Systems of PDE for Improvement of Energy Estimates*, Multiscale Modeling and Simulation, Vol 8, No. 4. 2010. DOI: 10.1137/090766292.
- (9) S. N. Chow, T. S. Yang and H. M. Zhou, *Global Optimizations by Intermittent Diffusion*, submitted to SIAM J. on Optimization.
- (10) F. Crosby, Q. Huynh and H. M. Zhou, *Total Variation Methods for Three Dimensional Lidar Image Denoising*, Photogrammetric Engineering and Remote Sensing, December 2010, pp. 1364-1371.
- (11) M. Badieirostami, A. Adibi, H. M. Zhou, and S. N. Chow, *Wiener Chaos Expansion and Simulation of Electromagnetic Wave Propagation Excited by a Spatially Incoherent Source*, SIAM Multiscale Modeling and Simulation, Vol.8, No. 2, 2010.
- (12) L. Lin, Y. Wang and H. M. Zhou, *Iterative Filters As An Alternative Algorithm for Empirical Mode Decomposition*, Advances in Adaptive Data Analysis (AADA), Vol 1, Issue 4 (a special issue on Hilbert-Huang transform and its applications), 2009.
- (13) H. M. Zhou, T. Chan and J. Shen, *A Quick Tour of Wavelets and PDE Techniques in Image Processing*, accepted to appear in Encyclopedia of Complexity and Systems Science, Springer (invited and reviewed)
- (14) S. N. Chow, W. X. Shen and H. M. Zhou, *Dynamical Order in Systems of Coupled Noisy Oscillators*, J. of Dynamics and Differential Equations, Vol 19, No. 4, Dec 2007, 1007-1036.

- (15) T. Chan, Y. Wang and H. M. Zhou, *Denoising Natural Color Photos in Digital Photography*, submitted to IEEE Transcation on Image Processing.
- (16) M. Badieirostami, A. Adibi, H. M. Zhou, and S. N. Chow, *Model for efficient simulation of spatially incoherent light using the Wiener chaos expansion method*, Opt. Lett. 32, 3188-3190 (2007)
- (17) S. Jain, P. Tsiotras and H. M. Zhou, *Adaptive Multiresolution Mesh Refinement for the Solution of Evolution PDE's*, SIAM J. Sci. Comput. Volume 31, Issue 2, pp. 1221-1248 (2008)
- (18) Tony F. Chan and H. M. Zhou, *Total Variation Wavelet Thresholding*, J. of Scientific Computing, Vol. 32, No. 2, August, 2007, 315-341. DOI: 10.1007/s10915-007-9133-0.
- (19) S-N Chow and H. M. Zhou, *An Analysis of Phase Noise and Fokker-Planck Equations*, J. of Differential Equations, Vol 234, Issue 2, March 2007, 391-411.
- (20) Y. Wang and H. M. Zhou, *A Total Variation Wavelet Algorithm for Medical Image Denoising*, the International Journal on Biomedical Imaging, Volume 2006, article ID 89095, 6 pages, 2006. DOI:10.1155/IJBI/2006/89095.
- (21) T. Hou, W. Luo, B. Rozovskii and H. M. Zhou, *Wiener Chaos Expansions and Numerical Solutions of Randomly Forced Equations of Fluid Mechanics*, J. of Computational Physics, 216 687-706 (2006).
- (22) Tony F. Chan, J. Shen and H. M. Zhou *Total Variation Wavelet Inpainting*, Journal of Mathematical Imaging and Vision, Vol 25, Number 1/July, 2006, 107-125.
- (23) Tony F. Chan, H. M. Zhou and T. Zhou, *A Recovery Bound for H^1 Based Wavelet Interpolations*, in the proceeding to the international conference on PDE-Based Image Processing and Related Inverse Problems. Oslo, Norway, Aug 8-12, 2005.
- (24) T. Hou, H. Kim, B. Rozovskii and H. M. Zhou, *Wiener Chaos Expansions and Numerical Solutions of Randomly Forced Equations of Fluid Mechanics*, the HERMIS Journal, the international journal of computer mathematics and its applications, vol. 4, 2004.
- (25) Tony F. Chan and H. M. Zhou, *ENO-wavelet Transforms and Some Applications*, in the book *Beyond Wavelets*, edited by J. Stoeckler and G. V. Welland, Academic Press (2003) (invited and reviewed).
- (26) Tony F. Chan and H. M. Zhou, *ENO-wavelet Transforms for Piecewise Smooth Functions*, SIAM J. Numer. Anal. Vol 40, No. 4 (2002), 1369–1404.
- (27) R. H. Chan, S. F. Xu, and H. M. Zhou, *On the Convergence Rate of a Quasi-Newton Method for Inverse Eigenvalue Problems*, SIAM J. Numer. Anal., 36 (1999), 436–441.

Reviewed and Invited Conference Proceedings

- (28) A. Shelton, M. Smith and H. M. Zhou, *A Multi-Resolution Discontinuous Galerkin Method for Unsteady Compressible Flows*, AIAA 2008-4140, 38th Fluid Dynamics Conference and Exhibit, Seattle, Washington, June 23-26, 2008.
- (29) Sachin Jain, Panagiotis Tsiotras and H. M. Zhou, *Adaptive Multiresolution Mesh Refinement for the Solution of Evolution PDEs*, in the proceedings to the 46th IEEE Conference on Decision and Control, New Orleans, Louisiana, December 12-14, 2007.
- (30) M. Badieirostami, A. Adibi, H. M. Zhou and S. N. Chow, *Efficient modeling of spatially incoherent sources based on Wiener chaos expansion method for the analysis of photonic crystal spectrometer*, in the Proceedings of SPIE, Vol 6480, doi:10.1117/12.717273, Feb, 2007.

- (31) Tony F. Chan, J. Shen and H. M. Zhou, *A Total Variation Wavelet Inpainting Model with Multilevel Fitting Parameters*, in the Proceedings to the SPIE Symposium on Advanced Signal Processing: Algorithms, Architectures and Implementations VIII, Vol. 6313, San Diego, CA, August, 2006, Ed: F. Luk.
- (32) d. Dugatkin, H. M. Zhou, T.F. Chan and M. Effros, *Lagrangian Optimization of a Group Testing for ENO Wavelets Algorithm*, in the proceeding to the 2002 Conference on Information Sciences and Systems, Princeton University, March 20-22, 2002.
- (33) Tony F. Chan and H. M. Zhou, *Total Variation Improved Wavelet Thresholding in Image Compression*, Proceedings to the 2000 International Conference on Image Processing, Vancouver, BC, Canada, Sept. 10-13, 2000.
- (34) Tony F. Chan, H. M. Zhou, *Adaptive ENO-wavelet Transforms and Its Application in Image Compression*, Proceedings to the 12th International Conference on Domain Decomposition Methods, Chiba University, Chiba, Japan, Oct. 25-29, 1999.
- (35) Tony F. Chan, H. M. Zhou, *Feature Preserving Lossy Image Compression Using Nonlinear PDE's*, in the Proceedings to the SPIE Symposium on Advanced Signal Processing: Algorithms, Architectures and Implementations VIII, Vol. 3461, San Diego, CA, July, 1998, Ed: F. Luk.
- (36) Tony F. Chan, H. M. Zhou, R.H. Chan, *Continuation Method for Total Variation Denoising Problem*, in the Proceedings to the SPIE Symposium on Advanced Signal Processing: Algorithms, Architectures and Implementations, Vol. 2563, San Diego, CA, July, 1995, Ed: F. Luk.

Other Publications

- (37) Tony F. Chan, J. Shen and H. M. Zhou, *Total Variation Wavelet Inpainting*, CAM report 04-47, Mathematics Department, UCLA, July 2004.
- (38) T. Hou, H. Kim, B. Rozovskii and H. M. Zhou, *Wiener Chaos Expansions and Numerical Solutions of Randomly Forced Equations of Fluid Mechanics*, in the proceedings to the 6th Hellenic European Conference on Computer Mathematics and its Applications, Athens, Greece, Sept. 25-27, 2003.
- (39) Tony F. Chan and H. M. Zhou, *Optimal Construction of Wavelet Coefficients Using Total Variation Regularization in Image Compression*, CAM report 00-27, Mathematics Department, UCLA, July, 2000.
- (40) Tony F. Chan, H. M. Zhou, *Adaptive ENO-wavelet Transforms for Discontinuous Functions*, CAM report (99-21), Math. Dept., UCLA, July, 1999.
- (41) Z.H. Teng and H. M. Zhou, *The L_1 Convergence Rate of Particle Method for Scalar Conservation Laws*, Master thesis, Math. Dept., Peking University, China, 1994.

Conference Participation

- **Conference Organization**

- (1) *Georgia Scientific Computing Symposium*, Georgia Institute of Technology, Atlanta, GA, Feb. 20, 2010, (with Jim Nagy, Luca Dieci and Sung Ha Kang).
- (2) *Georgia Scientific Computing Symposium*, Emory University, Atlanta, GA, Feb. 21, 2009, (with Jim Nagy).
- (3) *Recent Developments in Underwater Imaging*, minisymposium in the SIAM Conference on Imaging Sciences, July 7-9, 2008, San Diego, CA, (with F. Crosby, Q. Huynh).

- (4) *Recent Developments in Computation and Analysis of Wave Propagation and Application in Optics*, minisymposium in the SIAM Conference on Analysis of Partial Differential Equations, Dec 10-12, 2007, Mesa AZ, (with Chiu-Yen Kao and Richard Tsai).
- (5) *Recent Developments in Total Variation Based Models*, minisymposium in the SIAM Conference on Imaging Science, May 15-17, 2006, Minneapolis, Minnesota (with Tony Chan and Selim Esedoglu).

- **Invited Talks**

- *Efficient Methods for Forward and Inverse Stochastic Source Problems of Helmholtz Equation and Applications*, The Second Workshop on Interdisciplinary Applied and Computational Mathematics, Zhejiang University, HangZhou, China, Dec. 2-5, 2010.
- *Cross-Channel Anisotropic Diffusion for Color Image Denoising*, Workshop on Some Approximation Approaches for Data Processing, Zhejiang University, HangZhou, China, October 30-31, 2010.
- *Wiener Chaos Expansions for Stochastic Differential Equations with Applications in Photonic Crystal Spectrometer Design*, VIISA Workshop on Medical Imaging, The Chinese University of Hong Kong, Aug. 31, 2010.
- *Intermittent Diffusion and Global Optimizations*, International Conference on Applied Mathematics, City University of Hong Kong, Hong Kong, June 7-11, 2010.
- *Fokker-Planck Equations on a Graph with Finite Vertices*, The First Workshop on Interdisciplinary Applied and Computational Mathematics, Zhejiang University, HangZhou, China, June 2-5, 2010.
- *Fokker-Planck Equations on a Graph with Finite Vertices*, 2010 NCTS Workshop on Dynamical Systems, National Center for Theoretical Science, National Tsing Hua University, Taiwan, May 12-15, 2010.
- *Multiscale Total Variation Algorithms and Cross Channel Denoising for Color Images*, minisymposium on Mathematical Methods for Image Analysis, The IMACS World Congress on Computational and Applied Mathematics & Applications in Science and Engineering. Athens, GA, August 03-05, 2009.
- *Adaptive Multi-resolution Mesh Refinements for Evolution PDE's and Its Applications*, minisymposium on Adaptive mesh refinement strategies for simulating large multiphysics multiscale problems, The IMACS World Congress on Computational and Applied Mathematics & Applications in Science and Engineering. Athens, GA, August 03-05, 2009.
- *Phase Noise in Oscillators and Fokker-Planck Equations*, International Conference on Random Dynamical Systems, Chern Institute of Mathematics, Nankai University, Tianjin, China, June 8-12, 2009.
- *Efficient Numerical Methods for Stochastic Maxwell Equations and Applications in Spectrometer Design*, International Conference on Nonlinear and Stochastic Dynamics, SiChuan University, Chengdu, China, June 1-5, 2009.
- *Wavelets and Multiscale PDE Models for Image Processing*, International Conference on Scientific Computation and Differential Equations (SciCADE09), Beijing, May 25-29, 2009 (Plenary Speaker).
- *Intermittent diffusion for optimizations*, minisymposium on Mathematical and computational challenges on inverse and control problems for differential equations,

- International Conference on Scientific Computation and Differential Equations (SciCADE09), Beijing, May 25-29, 2009.
- *Multiscale PDE Models for Image Processing*, Midwest Conference on Mathematical Methods for Images and Surfaces, Lansing, April 18-19, 2009.
 - *Images, PDE's and Wavelets*, Hausdorff Research Institute for Mathematics, University of Bonn, Oct 14, 2008.
 - *Fast Numerical Simulations for Stochastic Maxwell Equations with Applications in Photonic Crystal Spectrometer Design*, Workshop on Multiscale and Stochastic Modeling, Analysis and Computation, MCIAM, Michigan State University, Oct 10-11, 2008.
 - *Efficient Numerical Simulations for Stochastic Maxwell Equations with Applications in Photonic Crystal Spectrometer Design*, SIAM Annual Conference, July 7-11, 2008, San Diego, CA.
 - *PDE Models for Wavelet Inpainting*, Workshop on Mathematical Imaging and Digital Media, Institute for Mathematical Sciences, National University of Singapore, Singapore, June 16-20, 2008 (Plenary Speaker).
 - *Variational PDE Techniques in Wavelet Transforms and Image Processing*, Chinese-French-Singaporean Joint Workshop on Wavelet Theory and Applications, Institute for Mathematical Sciences, National University of Singapore, Singapore, June 9 - 13, 2008.
 - *Efficient Numerical Simulations Based on Wiener Chaos Expansions for Stochastic Maxwell Equations and Applications in Photonic Crystal Spectrometer Design*, International Conference on Applied Mathematics: Modeling, Analysis and Computation, City University of Hong Kong, Hong Kong, June 1-5, 2008.
 - *Stochastic Maxwell Equations in Photonic Crystal Modeling and Simulations* IPAM workshop: Numerics and Dynamics for Optimal Transport, IPAM, UCLA, Los Angeles, CA, April 14-18, 2008.
 - *Fast Numerical Simulations for Stochastic Maxwell Equations in Photonic Crystal*, SIAM Conference on Analysis of Partial Differential Equations, Dec 10-12, 2007, Mesa AZ.
 - *Variational PDE Models for Wavelet Inpainting*, BIRS workshop on Trends in Applied Harmonic Analysis, Banff, Alberta, Canada, September 23-28, 2007.
 - *Wiener Chaos Expansions and Stochastic Maxwell Equations in Photonic Crystal*, International Conference on Spectral and High Order Methods (ICOSAHOM07), Beijing, China, June 18-22, 2007.
 - *Total Variation Wavelet Inpainting*, The Third International Conference on Computational Harmonic Analysis, Fudan University, Shanghai, China, June 18-22, 2007.
 - *Fast Numerical Methods Based on Wiener Chaos Expansions for Stochastic Maxwell Equations*, International Workshop on Multiscale Analysis and Applications, Nanyang Technological University, Singapore, Dec. 18-22, 2006.
 - *A Total Variation Wavelet Inpainting Model with Multilevel Fitting Parameters*, the SPIE Symposium on Advanced Signal Processing: Algorithms, Architectures and Implementations VIII, San Diego, CA, August, 2006.
 - *An analysis of phase noise and its Fokker-Planck equations*, minisymposium: Evolutionary Differential Equations and Applications in 12th International Conference

- on Statistics, Combinatorics, Mathematics and Applications (SCAM), Auburn, Alabama, Dec 2-4, 2005.
- *Total Variation Wavelet inpainting*, PDE-Based Image Processing and Related Inverse Problems, CMA, Oslo, Norway, Aug 8-12, 2005.
 - *An Analysis of Phase Noise and Fokker-Planck Equations*, International Conference on Multiscale Modeling and Scientific Computing in Honor of Professor B. Engquist's 60th Birthday, Beijing, June 10-12, 2005.
 - *ENO-Wavelet Transforms and its Applications in Image Compression*, International Conference on Applicable Harmonic Analysis, CMS, Zhejiang University, Hangzhou, May 23-27, 2005.
 - *Total Variation Wavelet Inpainting*, SIAM-SEAS 2005, Charleston, SC, March 25-26, 2005.
 - *Lagrangian Optimization of a Group Testing for ENO Wavelet Algorithms in Image Compression*, AMS-SIAM Special Session on Math. Image Proc. (MIP), AMS-SIAM-MAA joint annual meeting, Atlanta, GA, Jan 5-9, 2005.
 - *Total Variation Models for Wavelet Based Image Processing*, Workshop on Image Processing and Computer Vision/Graphics, Center of Mathematical Sciences, Zhejiang University, Hang Zhou, China, Dec. 20-24, 2004.
 - *The PDE and Variational Techniques in Wavelet Transforms and Their Applications in Image Processing*, Mathematical Image Analysis and Processing Workshop, Banff International Research Station for Mathematical Innovation and Discovery, Banff, Alberta, Canada, Oct. 23-28, 2004.
 - *Total Variation Models for Wavelet Based Image Inpainting*, AIMS' Fifth International Conference on Dynamical Systems and Differential Equations, California State Polytechnic University, Pomona, CA, June 16-19, 2004
 - *Variational PDE Techniques in Wavelet Based Image Compression*, IPAM Inverse Problems Workshop Series I, UCLA, Los Angeles, California, October 16-23, 2003.
 - *Optimal Construction of Wavelet Coefficients by Minimizing Total Variation in Image Processing*, IPAM Geometrically Based Motions Reunion Conference, Sept. 16-20, 2002, Lake Arrowhead, California.
 - *Compression of Piecewise Constant Level Set Images Using ENO Wavelets*, Invited Presentation at the Special Session on Level Set Methods in the SIAM 50th Anniversary Meeting, Philadelphia, PA, July 7-12, 2002.
- **Contributed Talks:**
 - *Adaptive ENO-wavelet Transforms for Image Compression*, Contributed talk in the IMA workshop on Image Processing and Low Level Vision, Institute of Mathematics and Applications, University of Minnesota, Minneapolis, Oct 16-22, 2000.
 - *Feature Preserving Lossy Image Compression Using Nonlinear PDE's* 25 minutes, SPIE conference on Advanced Signal Processing Algorithms, Architectures, and Implementations VIII, San Diego, California, July 1998.
 - **Posters:**
 - *Total Variation Improved Wavelet Thresholding in Image Compression*, the 2000 International Conference on Image Processing, Vancouver, BC, Canada, Sept. 10-13, 2000.

- *Feature Preserving Lossy Image Compression Using Nonlinear PDE's*, the Data Compression Conference, March, 1998, Snowbird, Utah. Organizers: J.A. Storer and M. Cohn.
- **Participated:**
 - Institute for Advance Study-PCMI 2010 Summer School on Image Processing, Park City, Utah, June 27- July 17, 2010.
 - 2010 DTRA/NSF Algorithm Workshop, Chapel Hill, NC, June 22-25, 2010.
 - Newton Institute Conference: Effective Computational Methods for Highly Oscillatory Problems: The Interplay between Mathematical Theory and Applications, Newton Institute, Cambridge University, Cambridge, UK, July 2-6, 2007.
 - Second Internatioanl Conference on Computational Harmonic Analysis, Nashville, Tennessee, May 24-30, 2004. Joint work *the PDE and Variational Techniques in Wavelet Transforms and Their Applications in Image Processing* was presented by T. F. Chan.
 - Mathematics in Imaging, MSRI, Berkeley, Nov 1-5, 1999, Organizers: F. A. Grunbaum and G. Uhlmann. Supported by MSRI. Paper *Adaptive ENO-wavelet Transforms for Discontinuous Functions* presented by T. F. Chan.

Invited Lectures

- Applied Math Seminar, Peking University, Beijing, Dec 24, 2010.
- Dynamical Syetem Seminar, Shanghai Jiaotong University, Shanghai, China, Dec. 20, 2010.
- Mathematics Department Seminar, Shanghai Normal University, Shanghai, China, Dec. 17, 2010.
- Mathematics Department Seminar, University of Science and Technology of China (USTC), Dec. 14, 2010.
- Mathematics Seminar, Hong Kong Baptist University, Hong Kong, Nov 22, 2010.
- Math Colloquium, The Chinese University of Hong Kong, Nov. 19, 2010.
- Mathematics and Computational Science Seminar, Sun Yat-Sen University, GuangZhou, China, Nov 18, 2010.
- Faculty of Science and Technology Seminar, University of Macau, China, Nov 15, 2010.
- Croucher Lab Seminar, Hong Kong University of Science and Technology, Sept 21, 2010.
- Applied and Computational Math Seminar, Department of Mathematics, University of South Carolina, Oct 21, 2009.
- Applied Math Seminar, Department of Mathematics, Purdue University, March 27, 2009.
- Math Colloquium, Department of Mathematics, University of Alabama at Birmingham, Feb 7, 2009.
- Math Colloquium, Department of Mathematics, Oklahoma State University, Nov 14, 2008.
- Applied Math Seminar, University of Georgia, Nov 3, 2008.
- Applied Math Seminar, Department of Mathematics, Michigan State University, East Lansing, MI, March 14, 2008.
- Mathematics Department Colloquium, University of Alabama, March 26, 2008.
- Applied Math Seminar, Emory University, March 5, 2008.

- Applied Math Colloquium, Department of Mathematics, University of California, San Diego, May 8, 2007.
- Scientific Computing Seminar, Division of Applied Mathematics, Brown University, Providence, RI, May 2, 2007
- Applied Math Seminar, Department of Mathematics, University of Texas, Austin, April 5, 2007.
- Department of Mathematics, University of Georgia, Athens, March 2, 2007.
- Center for Scientific Computation and Mathematical Modeling, University of Maryland, College Park, Feb 8, 2006
- The Institute of Computational Mathematics and Scientific/Engineering Computing, Chinese Academy of Sciences, July 4, 2005.
- School of Mathematical Sciences, Peking University, June 3, 2005.
- Department of Mathematics, Georgia Southern University, Feb 25, 2005.
- School of Mathematical Sciences, Peking University, Dec 25, 2004.
- Applied Mathematics Seminar, Department of Mathematics, University of California, Davis, April 25, 2003.
- Computational and Applied Mathematics Seminar, Department of Mathematics, University of California, Irvine, April 7, 2003.
- *The Adaptive ENO Wavelet Transform and its Application in Image Compression*, Numerical Analysis Seminar, Department of Mathematics, University of California, San Diego, June 4, 2002.
- *Lagrangian Optimization of a Group Testing for ENO Wavelet Algorithms for Image Compression*, Applied Mathematics Colloquium at Department of Mathematics, University of California, Los Angeles, May 14, 2002.

Membership

- Society of Industrial and Applied Mathematics, 2001 – present.
- American Mathematical Society, 1996 – present.
- Society for Photo-Optical Instrumentation Engineers, 1998 – 1999

Editorial Work

- Appointed as a managing editor for the journal *Inverse Problems and Imaging* (IPI) by American Institute of Mathematical Sciences (AIMS) since Jan. 2008.

Referee for journals

- Multiscale Modeling and Simulation,
- J. Computational Harmonic Analysis,
- J. on Computational Physics,
- SIAM J. Applied Mathematics,
- SIAM J. Numerical Analysis,
- SIAM J. Scientific Computing,
- International J. on Biomedical Imaging,
- IEEE Transactions on Signal Processing,
- Mathematical Modelling and Numerical Analysis,
- Numerical Algorithms (Netherlands).
- Peer Review or Panelist for NSF, Netherlands Organization for Science Research.