

CURRICULUM VITAE

WEI WANG

EDUCATION

- Ph.D. Brown University, Applied Mathematics May 2008
- M.S. Brown University, Applied Mathematics May 2006
- B.S. University of Science and Technology of China, Mathematics July 2004

FULL-TIME ACADEMIC EXPERIENCE

- Florida International University, Assistant Professor, Mathematics 08/2010-Present
- Stanford University, Postdoctoral Fellow, Mathematics 06/2008-05/2010

PART-TIME ACADEMIC EXPERIENCE

- Brown University, Research scholar, Mathematics 06/2010-08/2010
- Brown University, Research Assistant/Teaching Assistant/Fellowship,
Mathematics 08/2004 - 05/2008

PUBLICATIONS IN DISCIPLINE

Referred Journal Publications

- W. Wang, C.-W. Shu, H. C. Yee, D. V. Kotov and B. Sjögren, High order finite difference methods with subcell resolution for stiff multispecies detonation capturing, Communications in Computational Physics, v17(2015), pp. 317-336.
- Y. Zhang, W. Wang, J. Guzmán and C.-W. Shu, Multi-scale discontinuous Galerkin method for solving elliptic problems with curvilinear unidirectional rough coefficients, Journal of Scientific Computing, v61(2014), pp. 42-60.

- H. C. Yee, D. V. Kotov, W. Wang and C.-W. Shu, Spurious behavior of shock-capturing methods: problems containing stiff source terms and discontinuities, *Journal of Computational Physics*, v241(2013), pp. 266-291.
- W. Wang, H. C. Yee, B. Sjögren and C.-W. Shu, High order finite difference methods with subcell resolution for advection equations with stiff source terms, *Journal of Computational Physics*, v231(2012), pp. 190-214.
- W. Wang, H. C. Yee, B. Sjögren, T. E. Magin and C.-W. Shu, Construction of low dissipative high order well-balanced filter schemes for non-equilibrium flow, *Journal of Computational Physics*, v230(2011), pp. 4316-4335.
- W. Wang, J. Guzmán and C.-W. Shu, The multiscale discontinuous Galerkin method for solving a class of second order elliptic problems with rough coefficients, *International Journal of Numerical Analysis and Modeling*, v8(2011), pp. 28-47.
- W. Wang, C.-W. Shu, H. C. Yee and B. Sjögren, High order well-balanced schemes and applications to non-equilibrium flow with stiff source terms, *Journal of Computational Physics*, v228(2009), pp. 6682–6702.
- W. Wang and C.-W. Shu, The WKB local discontinuous Galerkin method for the simulation of Schrödinger equation in a resonant tunneling diode, *Journal of Scientific Computing*, v40(2009), pp. 360-374.
- W. Wang, X. Li and C.-W. Shu, The discontinuous Galerkin method for the multi-scale modeling of dynamics of crystalline solids, *Multiscale Modeling and Simulation*, v7(2008), pp. 294-320.

Proceedings (Non-refereed)

- H. C. Yee, D. V. Kotov, W. Wang and C.-W. Shu, Spurious behavior of shock-capturing methods: problems containing stiff source terms and discontinuities, 7th International Conferences on Computational Fluid Dynamics (ICCFD7), Big Island, Hawaii, July 9-13, 2012.
- H. C. Yee, B. Sjögren, C.-W. Shu, W. Wang, T. E. Magin and A. Hadjadj, On numerical methods for hyperbolic turbulent flows, Proceedings of the 7th European Symposium on Aerothermodynamics, Brugge, Belgium, May 9-12, 2011.

Other Research Publications (Non-refereed)

- D. V. Kotov, H. C. Yee, W. Wang and C.-W. Shu, On spurious numerics in solving reactive equations, Annual Research Briefs, Center for Turbulence Research, Stanford University (2012).
- W. Wang, C.-W. Shu, H. C. Yee and B. Sjögren, High order finite difference methods with subcell resolution for 2D detonation waves, Annual Research Briefs, Center for Turbulence Research, Stanford University (2011), pp. 371-380.
- D. V. Kotov, H. C. Yee, B. Sjögren, W. Wang and C.-W. Shu, Performance of four high-order shock-capturing schemes for stiff source terms with discontinuities: preliminary results Annual Research Briefs, Center for Turbulence Research, Stanford University (2011), pp. 393-403.
- W. Wang, C.-W. Shu, H. C. Yee and B. Sjögren, High-order finite difference methods with subcell resolution for hyperbolic conservation laws with stiff reaction terms: preliminary results, Annual Research Briefs, Center for Turbulence Research, Stanford University (2010), pp. 149-160.
- W. Wang, H. C. Yee, B. Sjögren, T. E. Magin and C.-W. Shu, Construction of low dissipative high order well-balanced filter schemes for non-equilibrium flow, Annual Research Briefs, Center for Turbulence Research, Stanford University (2009), pp. 409-421.
- W. Wang, C.-W. Shu, H. C. Yee and B. Sjögren, On well-balanced schemes for non-equilibrium flow with stiff source terms, Annual Research Briefs, Center for Turbulence Research, Stanford University (2008), pp. 391-402.

PRESENTATIONS AT CONFERENCES AND SEMINARS

- Invited talks:
 - “A high order finite difference method with subcell resolution for stiff multispecies detonation in under-resolved mesh”, Math Colloquium, Department of Mathematical Sciences, Michigan Technological University, September 26, 2014.

- “High order finite difference WENO method with subcell resolution for stiff multispecies reacting flows”, University of Science and Technology of China, Hefei, China, July 25, 2014.
- “High order finite difference WENO method with subcell resolution for stiff multispecies reacting flows”, Institute of Applied Physics and Computational Mathematics, Beijing, China, July 17, 2014.
- “A robust high order finite difference method for strong multispecies detonation”, Math Colloquium, Department of Mathematics, University of Massachusetts Dartmouth, March 2014.
- “Multi-scale discontinuous Galerkin method for solving elliptic problems with curvilinear unidirectional rough coefficients”, AMS Southeastern Spring Sectional Meeting, University of Tennessee, Knoxville, TN, March 21-23, 2014.
- “A high order WENO scheme for detonation waves”, SIAM Conference on Analysis of Partial Differential Equations, Lake Buena Vista, FL, December 7-10, 2013.
- “Multiscale discontinuous Galerkin methods for second order elliptic equations”, Math Colloquium, Department of Mathematics, Iowa State University, November 4, 2013.
- “High order methods for stiff multispecies detonation in under-resolved mesh”, Scientific Computing Seminar, Division of Applied Math, Brown University, October 18, 2013.
- “High order methods for stiff multispecies detonation in underresolved mesh”, State Key Lab of Explosion Science and Technology, Beijing Institute of Technology, China, May 29, 2013.
- “High order finite difference methods with subcell resolution for stiff multispecies detonation capturing”, The second Workshop on Development and Application of High-Order Numerical Methods, Xiamen University, China, May 18-21, 2013.
- “Multiscale discontinuous Galerkin method for elliptic equations with rapidly oscillatory coefficients”, SIAM Conference on Computational Science and Engineering, Boston, MA, February 25-March 1, 2013.

- “High order discontinuous Galerkin and Weighted Essentially Non-Oscillatory algorithms for compressible turbulence simulations”, RCA Awards kick-off meeting at the National Institute of Aerospace, Hampton, VA, August 9-10, 2012.
- “A high order WENO Scheme for detonation waves”, The 9th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Orlando, FL, July 1-5, 2012.
- “A modified finite difference WENO scheme with subcell resolution for hyperbolic conservation laws with stiff reaction terms”, ICIAM 2011-7th International Congress on Industrial and Applied Mathematics, Vancouver, BC, Canada, July 18-22, 2011.
- “Multiscale discontinuous Galerkin methods and applications”, PDE/Applied Math Seminar, Department of Math, Drexel University, April 2011.
- “High order finite difference methods with subcell resolution for hyperbolic conservation laws with stiff reaction terms”, Scientific Computing Seminar, Division of Applied Math, Brown University, January 2011.
- “A DG method for solving a class of second order elliptic problems with rough coefficients”, Finite Element Circus, IMA special event, MN, November 5-6, 2010.
- “Multiscale discontinuous Galerkin methods and applications”, Math Colloquium, Department of Mathematics, University of Massachusetts Dartmouth, March 2010.
- “Multiscale discontinuous Galerkin methods and applications”, Math Colloquium, Department of Mathematics & Statistics, Florida International University, February 2010.
- “The multiscale discontinuous Galerkin method for solving a class of second order elliptic problems with rough coefficients”, the Joint Mathematics Meetings, San Francisco, CA, January 13-16, 2010.
- “The WKB local discontinuous Galerkin method for the simulation of Schrödinger equation in a resonant tunneling diode”, SIAM Annual meeting, Denver, CO, July 6-10, 2009.

- “The discontinuous Galerkin method for the multiscale modeling of dynamics of crystalline solids”, BIRS meeting on Discontinuous Galerkin Methods for Partial Differential Equations, Banff Center, Alberta, Canada, November 25-30, 2007.
- Posters:
 - “High order well-balanced schemes for non-equilibrium flows”, IMA workshop: Numerical Solutions of Partial Differential Equations: Novel Discretization Techniques, IMA, November 1-5, 2010.
 - “High order well-balanced schemes for non-equilibrium flows”, International Conference on Advances in Scientific Computing, Brown University, December 6-8, 2009.

FUNDED RESEARCH

- Sole PI: “Efficient high order methods for two multiscale problems”, NSF DMS-1418953, 2015-2017, \$126,125.
- Co-I: “High order discontinuous Galerkin and weighted essentially non-oscillatory algorithms for compressible turbulence simulations”, with PI Chi-Wang Shu from Brown University, NASA grant NNX12AJ62A, subcontract from Brown University, 2012-2015, \$104,986.
- Summer Faculty Development Award, Florida International University, 2011, \$6500.

PROPOSALS SUBMITTED BUT NOT FUNDED

- Sole PI: “Efficient high order numerical methods for multiscale problems”, NSF, 2013-2016, \$116,918, not funded.
- Sole PI: “A multiscale discontinuous Galerkin method for the Schrodinger equation in quantum transport”, NSF, 2012-2015, \$120,960, not funded.
- Sole PI: “Multiscale discontinuous Galerkin methods and applications”, NSF, 2011-2014, \$111,341, not funded.

- Contribution for FIU “Silicon Mechanics Research Cluster Grant”, NVIDIA, 2012, not funded.

AWARDS AND FELLOWSHIPS

- Travel Award
 - IPAM program: Advances in Scientific Computing, Imaging Science and Optimization: Stan Osher’s 70th Birthday Conference, Institute for Pure and Applied Mathematics, April 4 - 6, 2012.
 - AMS Simons Travel Award, American Mathematical Society, 2011-2013, \$4000.
 - NSF-AWM Travel Award, Association for Women in Mathematics, 2011, \$1000.
 - NSF-AWM Travel Award, Association for Women in Mathematics, 2009, \$1305.
 - IPAM program: Metamaterials: Applications, Analysis and Modeling, Institute for Pure and Applied Mathematics, January 25 - 29, 2010.
- Postdoctoral Fellowship, Center for Turbulence Research, Stanford University, 2008-2010.
- The Stella Dafermos Award, Division of Applied Mathematics, Brown University, 2008.
- Graduate Student Fellowship, Brown University, 2004-2005.

PROFESSIONAL ACTIVITIES AND PUBLIC SERVICE

- Conference organizers
 - Mini-symposium on “Numerical Analysis and Computation on Multiscale Problems” on SIAM Conference on Computational Science and Engineering, Boston, MA, February 25-March 1, 2013.
 - Special session on “Recent Developments of Finite Element Methods for Partial Differential Equations”, AMS Spring Southeastern Section Meeting, Tampa, FL, March 10-11, 2012.

- Journal Referees

Applications and Applied Mathematics, Applied Mathematics and Computation, Advances in Water Resources, Communication in Computational Physics, Mathematics of Computation, International Journal of Computational Fluid Dynamics, Journal of Computational Physics, Journal of Scientific Computing, Mathematical Modeling and Analysis, Computers and Fluids.

- University Services

- Hiring committee, 2010-2011, 2011-2012, 2012-2013, 2013-2014.
- PhD proposal ad-hoc committee, 2010-2011, 2011-2012.
- Merit-bonus ad-hoc committee, 2013-2014.

- Dissertation/Thesis Committees

- Master students: Marco Rodriguez (Math 2012), Zhongyuan Hu (Math 2013).
- Ph.D. student: Bradley Klotz (Department of Earth & Environment, 2014-2016 expected).