Wujun Zhang

Rutgers University Department of Mathematics Hill Center - Busch Campus 110 Frelinghuysen Road, Piscataway, NJ 08854

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Employment

Assistant Professor, Department of Mathematics, Rutgers University, U.S.A. 2016 - present Brin Post-doctoral Fellow, University of Maryland, College Park, U.S.A. 2012-2016

Education

Ph.D. Mathematics, University of Minnesota, Twin Cities, U.S.A. 2012.

M.A. Applied Mathematics, University of Minnesota, Twin Cities, U.S.A. 2009.

B.S. Mathematics, Fudan University, Shanghai, China, 2006.

Research Interests

Finite element methods for liquid crystals and complex fluid

Numerical approximation for optimal transport problem and Monge-Ampére equation

Numerical approximation of stochastic game and optimal stochastic control

A posteriori error estimation and adaptivity

Discontinuous Galerkin methods

Publications

- B. COCKBURN AND W. ZHANG, A posteriori error estimates for HDG methods. J. Sci. Comput., 51(3) 2012, 582–607.
- [2] B. COCKBURN AND W. ZHANG, A posteriori error analysis for hybridizable discontinuous Galerkin methods for second order elliptic problems. SIAM J. Numer. Anal., 51(1) 2013, 676–693.
- [3] B. COCKBURN AND W. ZHANG, An a posteriori error estimate for the variable-degree Raviart-Thomas method. Math. Comp., 83(287) 2014, 1063–1082.
- [4] J. CUI AND W. ZHANG, An Analysis of HDG Methods for the Helmholtz Equation. IMA J. Numer. Anal., 34(1) 2014, 279–295.
- [5] G. FU, W. QIU AND W. ZHANG, An analysis of HDG methods for convection-dominated diffusion problems. Math. Model. Numer. Anal., 49 (2015) 225–256.

- [6] B. COCKBURN, R. H. NOCHETTO AND W. ZHANG, Contraction property of adaptive hybridizable discontinuous Galerkin methods. Math. Comp., 85 (2016) 1113–1141.
- [7] R. H. NOCHETTO AND W. ZHANG, Discrete ABP estimate and convergence rates for linear elliptic equations in non-divergence form. Found. Comput. Math., 18(3) 2018 537-593.
- [8] R. H. NOCHETTO, S. W. WALKER AND W. ZHANG, A finite element method for nematic liquid crystals with variable degree of orientation. SIAM J. Numer. Anal., 55 (2017), 1357–1386.
- [9] R. H. NOCHETTO, S. W. WALKER AND W. ZHANG, The Ericksen Model of Liquid Crystals with Colloidal and Electric Effects. J. Comput. Phys., 352 (2018), 568-601.
- [10] M. NEILAN, A. J. SALGADO AND W. ZHANG, Numerical analysis of strongly nonlinear PDEs. Acta Numer. 26 (2017), 137–303.
- [11] R. H. NOCHETTO AND W. ZHANG, Pointwise rates of convergence for the Oliker-Prussner method for the Monge Ampére equation. Numer. Math., 141(1), (2019), 253–288.
- [12] M. NEILAN AND W. ZHANG, Rates of convergence in W_p^2 -norm for the Monge-Ampère equation. SIAM J. Numer. Anal., 56(5), (2018), 3099–3120.
- [13] R. H. NOCHETTO, D. NTOGKAS AND W. ZHANG, Two-scale method for the Monge-Ampère equation: convergence to the viscosity solution. Math. Comp., 88 (2019), 637–664.
- [14] R. H. NOCHETTO, D. NTOGKAS AND W. ZHANG, Two scale method for the Monge-Ampère equation: pointwise error estimate. IMA J. of Numer. Anal., dryo26, https://doi.org/10.1093/imanum/dryo26.
- [15] A. J. SALGADO AND W. ZHANG, Finite element approximation of the Isaacs equation. Math. Model. Numer. Anal., 53, (2019), 351–374.
- [16] A. CONTRERAS, X. XU AND W. ZHANG, An elementary proof of eigenvalue preservation for the co-rotational Beris-Edwards system. J. Nonlinear Sci., 29(2), (2019) 789–801.
- [17] M. NEILAN, A. J. SALGADO AND W. ZHANG, *The Monge-Ampère equation* Handbook of Numerical Analysis: Geometric Partial Differential Equations. 22

Conference and Seminar

Mini-symposium on DG methods, ICIAM Vancouver Canada, Jul. 18-22, 2011.

Numerical analysis seminar, University of Maryland, College Park, Feb. 7, 2012.

Mini-symposium on Error Estimation and Adaptivity, WCCM Sao Paulo Brazil, Jul. 8-13, 2012.

Finite element circus, University of Pittsburgh, Oct. 19-20, 2012.

Numerical analysis seminar, George Mason University, Feb. 15, 2013

Numerical analysis seminar, University of Delaware, Mar. 21, 2013

Delmar Numerics Day 2013, University of Maryland, College Park, May 4 2013

Finite element circus, University of Delaware, Oct. 18-19, 2013.

Differential equation seminar, University of Maryland, Baltimore County, Nov. 4, 2013.

CCMA PDEs and numerical methods seminar series, Pennsylvania State University, Apr. 18, 2014

Numerical analysis seminar, University of Maryland, College Park, May 6, 2014. Delmar Numerics Day 2014, University of Maryland, Baltimore County, May 10, 2014 Mini-symposium on Numerical methods for PDEs, SIAM annual meeting, Chicago, Jul. 7-11, 2014. Numerical analysis seminar, University of Tennessee, Knoxville, Sep 24, 2014. Numerical analysis seminar, Louisiana State University, Sep 30, 2014. Analysis seminar, University of Texas at Austin, Oct 15, 2014. Computational and Applied Mathematics Seminar, Purdue University, Oct 27, 2014 Numerical analysis seminar, Texas A&M University, Nov 6, 2014 CNA seminar, Carnegie Mellon University, Nov 11, 2014 Scientific Computing Seminar, University of Houston, Nov 20, 2014 Numerical analysis seminar, University of Delaware, Dec 4, 2014 Colloquium, Syracuse University, Jan 15, 2015 SCAN, Cornell University, Feb 9, 2015 Finite element circus, George Mason University, Mar 27, 2015 Delmar Numerics Day 2015, U.S. Naval Academy, Anapolis, May 9, 2015 Mini-symposium, ICIAM 2015, Beijing, China, Aug 10-14, 2015 Colloquium, ShanghaiTech University, Shanghai, China, Sep 17, 2015 Colloquium, Purdue University, Jan 25, 2015 Colloquium, Rutgers University, Feb 1, 2015 Colloquium, Florida State University, Feb 4, 2015 Mini-symposium, SIAM Conference on Computational Science and Engineering, Hilton Atlanta, GA. Feb. 27 - Mar.3, 2017 Mini-symposium, AMS Sectional Meeting, Charlestown, SC. Mar.10 - 12, 2017 Colloquium, Old Dominion University, Apr. 6, 2017 Mini-symposium, AMS Sectional Meeting, Hunter College, New York, May. 6-7, 2017 Recent Advance and Challenges in Discontinuous Galerkin Methods and Related Approaches, Minneapolis, Jun. 29 - Jul. 1, 2017 Finite element circus, University of Maryland, Baltimore County, Oct 20-21, 2017 SIAM Conference on Analysis of Partial Differential Equations, Baltimore, Dec 9-12, 2017 Finite element circus, University of Tennessee, Knoxville, Mar 16-17, 2018 Computational Mathematics Seminar, University of Pittsburgh, Pittsburgh, Apr 16-18, 2018 Mini-symposium on discretization for linear and nonlinear problems SIAM annual meeting, Portland,

Jul 9-13, 2018

Special Session on Recent Analytic and Numeric Results on Nonlinear Evolution Equations, AMS sectional meeting, University of Delaware, Sep. 29-30, 2018.

PDE seminar, University of Pennsylvania, Nov. 29, 2018.

Applied and Computational math seminar, George Mason University, Apr. 19, 2019.

Delmar Numerics Day, University of Maryland, College Park, May 11, 2019

MAFELAP, Brunel University, London, Jun. 18, 2019.

Workshop

Topics in nonlinear PDEs and Calculus of Variations and applications in materials science, Carnegie Mellon University, May 30 – June 7, 2013

Mathematics and Mechanics in the 22nd Century: Seven Decades and Counting... Eugene, Oregon, Oct. 23 – 25, 2015

Mathematical Models of Defects and Patterns. Courant Institute of Mathematical Sciences, New York University, Jan. 5–8, 2016

Grants and Honors

- Brin Post-doctoral Fellowship, July 2012 July 2015
- AMS Simons Travel Grant: (4,000\$), July 2014 June 2016.
- NSF Grant DMS-1818861: (amount 55,947\$ for the first year), August 2018 July 2021.

Teaching Experience

RUTGERS UNIVERSITY, New Brunswick, Lecturer

Fall 2018, Numerical Analysis I (16:643:573)

Fall 2017, Numerical Analysis I (16:642:573)

Fall 2017, Numerical Analysis I (01:640:373)

Spring 2017, Numerical Analysis II (16:642:574)

Fall 2016, Numerical Analysis I (16:642:573)

UNIVERSITY OF MARYLAND, Lecturer

Fall 2015, Multivariable Calculus and Calculus I

Spring 2015, Multivariable Calculus.

Spring 2014, Application of linear algebra.

Fall 2013, Application of linear algebra.

Spring 2013, Calculus I (large lecture).

Fall 2012, Application of linear algebra.

Wujun Zhang

UNIVERSITY OF MINNESOTA, Recitation Instructor

- Spring 2011, Linear Algebra and Differential Equations.
- Fall 2010, Calculus II.
- Fall 2009, Linear Algebra and Differential Equations.
- Fall 2008, Calculus I.
- Spring 2008, Pre-calculus II
- Fall 2007, Pre-calculus I
- Spring 2007, Multivariable Calculus
- Fall 2006, Calculus I

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