

CURRICULUM VITAE

XINWEI YU

Mathematical and Statistical Sciences
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Professional Experience.

- 07/2008 – . Assistant Professor, Mathematical and Statistical Sciences, University of Alberta, Edmonton, Canada.
- 07/2005 – 06/2008. CAM Assistant Professor, Mathematics Department, University of California, Los Angeles. Supervisor: Prof. Russel E. Caflisch.

Education.

- 09/2000 – 06/2005. Ph. D. in Applied and Computational Mathematics, California Institute of Technology, Pasadena, CA. Advisor: Prof. Thomas Y. Hou.
- 09/1997 – 07/2000. M.S. in Scientific and Engineering Computational Mathematics, Peking University, Beijing, China. Advisor: Prof. Lung-an Ying; Co-advisor: Prof. Zhiping Li.
- 09/1993 – 07/1997. B.S. in Mathematics, Peking University, Beijing, China.

Research Interests.

Partial Differential Equations; Fluid Mechanics.

Honors and Awards.

- The Richard C. DiPrima Prize, SIAM, 2006.
- W. P. Carey Prize in Applied Mathematics for outstanding doctoral dissertation, Caltech, 2005.
- Phi-Tau-Phi Scholarship, 2002.
- Saul Kaplan Fellowship, Caltech, 2000.
- Zhang ChangCheng Scholarship, Peking University, China, 1996.
- HuaWei Scholarship, Peking University, China, 1995.
- LianHeXinHao Scholarship, Peking University, China, 1994.

Publications.

Journal Publication

1. Chuong V. Tran, Xinwei Yu, Luke Blackbourn, "Two-dimensional magnetohydrodynamic turbulence in the limits of infinite and vanishing magnetic Prandtl number", *J. Fluid Mech.* 725, 195-215, 2013.
2. Chuong V. Tran, Xinwei Yu, Zhichun Zhai, "On global regularity of 2D generalized Magnetohydrodynamic equations". *J. Differential Equations* 254(10), 4194-4216, 2013.
3. Chuong V. Tran, Xinwei Yu, Zhichun Zhai, "Note on solution regularity of the generalized Magnetohydrodynamic equations with partial dissipation". *Nonlinear Analysis TMA* 85, 43-51, 2013.
4. Gencheng Guo, Xinwei Yu, Yindi Jing, Mrinal Mandal, "Optimal design and noise-enhanced effect for binary threshold detector under AUC measure", *IEEE Signal Processing Letters* 20(2), 161-164, 2013.
5. Hichem Hajaiej, Xinwei Yu, Zhichun Zhai, "Fractional Gagliardo-Nirenberg and Hardy inequalities under Lorentz norms", *J. Math. Anal. Appl.* 396(2), 569-577, 2012.
6. Yindi Jing, Xinwei Yu, "ML-Based channel estimations for non-regenerative relay networks with multiple transmit and receive antennas", *IEEE JSAC*. 30(8) 1428-1439, 2012.

7. Chuong V. Tran, Xinwei Yu, "Bounds for the number of degrees of freedom of incompressible magnetohydrodynamic turbulence in two and three dimensions", *Phys. Rev. E.* 85 066323, 2012 (9 pp).
8. Xinwei Yu, Zhichun Zhai, "Well-posedness for fractional Navier-Stokes equations in the largest critical spaces", *Math. Meth. Appl. Sci.* 35(6), 676-683, 2012.
9. Xinwei Yu, Zhichun Zhai, "On the Lagrangian averaged Euler equations: local well-posedness and blow-up criterion", *Comm. Pure Appl. Anal.* 11(5), 1809-1823. 2012.
10. Thomas Y. Hou, Congming Li, Zuoqiang Shi, Shu Wang, Xinwei Yu, "On singularity formation of a nonlinear nonlocal system", *Arch. Rat. Mech. Anal.*, 199(1), 117-144, 2011.
11. Xinwei Yu, "A note on the energy conservation of the ideal MHD equations", *Nonlinearity*, 22, 913-922, 2009.
12. Xinwei Yu, "Remarks on the global regularity for the super-critical 2D dissipative quasi-geostrophic equation", *Journal of Mathematical Analysis and Applications*, 339: 359-371, 2008.
13. Jian Deng, Thomas Y. Hou, Ruo Li, Xinwei Yu, "Level set dynamics and the non-blowup of the 2D quasi-geostrophic equation", *Methods and Applications of Analysis*, 13(2): 157-180, 2006.
14. Jian Deng, Thomas Y. Hou, Xinwei Yu, "Improved geometric conditions for non-blowup of 3D Euler equations", *Communications in Partial Differential Equations*, 31(2): 293-306, 2006.
15. Jian Deng, Thomas Y. Hou, Xinwei Yu, "A level set formulation for the 3D incompressible Euler equations", *Methods and Applications of Analysis*, 12(4): 427-440, 2005.
16. Jian Deng, Thomas Y. Hou, Xinwei Yu, "Geometric properties and non-blowup of 3-D incompressible Euler flow", *Communications in Partial Differential Equations*, 30(2): 225-243, 2005.
17. Zhiping Li, Lungan Ying, Xinwei Yu, "Singular perturbation of a class of non-convex functionals", *Nonlinear Analysis: Theory, Methods, and Applications*, 52(4): 1129-1152, 2003.

Refereed Conference Proceedings

1. Yindi Jing, Xinwei Yu, "SVD-based channel estimation for MIMO relay networks", IEEE VTC 2012.
2. Jian Deng, Thomas Y. Hou, Xinwei Yu, "Localized non-blowup conditions for the 3D incompressible Euler equations", Third International Congress of Chinese Mathematicians. Part 1, 2, 603-611, AMS/IP Stud. Adv. Math., 42, pt. 1,2, Amer. Math. Soc. Providence, RI, 2008.

Book Chapters

1. Thomas Y. Hou and Xinwei Yu, "Lecture Notes on Theory of Incompressible Inviscid Flow", Nonlinear Conservation Laws, Fluid Systems and Related Topics, 1-71, Ser. Contemp. Appl. Math. CAM, 13, World Sci. Publishing, Singapore, 2009.

Preprints

- i. Dong Li, Xinwei Yu, "On some Liouville type theorems for the compressible Navier-Stokes equations".
- ii. Dong Li, Xinwei Yu, Zhichun Zhai, "On the Euler-Poincaré equation with non-zero dispersion".

Theses

- "Localized Non-blowup Conditions for 3D Incompressible Euler Flows and Related Equations", Ph. D. thesis, California Institute of Technology, 2005.

- “Singular Perturbation of Non-convex Functionals and Microstructures with Surface Energy”, Master thesis, Peking University, 2000.

Professional and Public Lectures.

Invited Conference and Workshop Talks

- CRM Workshop on Geometry and Dynamics of Fluid, 45 mins talk, Montreal, Canada, 05/21 – 05/25/2012.
- SIAM Conference on Analysis of PDEs, 30 mins talk, San Diego, USA, 11/14 – 11/17/2011.
- The First Oklahoma PDE Workshop, 30 mins talk, Stillwater, Oklahoma, USA, 11/21–11/22/2009.
- CMS/CSHPM Summer Meeting 2009. Session of “Geometric Harmonic Analysis and Partial Differential Equations”. Memorial University of Newfoundland, St. John’s, Newfoundland. 06/06–06/08/2009.
- Singular phenomena in nonlinear optics, hydrodynamics and plasmas, Banff International Research Station 2-Day Workshop (08w2133), 10/24–10/26/2008.
- Southern California Conference on the Mathematics of Fluids, Los Angeles, CA, 03/29–03/30/2008.
- Conference on Abstract and Nonlocal Parabolic Equations, Bedlewo, Poland, 06/25–06/30/2007.
- AMS sectional meeting, no.1018, San Francisco, CA, 04/29–04/30/2006.
- Workshop on Multiscale Numerical Analysis, Beijing, China, 12/2003.

Invited Seminar and Colloquium Talks

- Colloquium speaker, Academy of Mathematics and System Sciences, CAS, Beijing, China, 08/2011.
- Colloquium speaker, Department of Mathematics, Florida International University, 12/2009.
- Colloquium speaker, Department of Mathematics, Colorado State University, 04/2008.
- Colloquium speaker, Department of Mathematical and Statistical Sciences, University of Alberta, 02/2008.
- Colloquium speaker, Department of Mathematics, University of Colorado, Boulder, 01/2008.
- Colloquium speaker, Department of Mathematics, University of Texas at Austin, 11/2007.
- Computational Mathematics Seminar, Institute of Computational Mathematics and Scientific/Engineering Computing, Beijing, China, 07/2007.
- PDE and Numerical Methods Seminar, Department of Mathematics, PennState University, 02/2006.
- Applied Mathematics Seminar, Department of Mathematics, UCLA, 06/2005.
- Colloquium speaker, Applied and Computational Mathematics, Caltech, 05/2005.
- Computational and Applied Mathematics Seminar, Department of Mathematics, UCSD, 01/2005.

Other Talks and Posters

- Poster, “Euler Equations: 250 Years On”, Aussois, France, 06/18–06/23/2007.

Conference and Workshop Participation.

- Contributed talk, SIAM Conference on Analysis of Partial Differential Equations, Mesa, AZ, 12/10–12/12/2007.
- Contributed talk, SIAM Conference on Analysis of Partial Differential Equations, Miami, FL, 12/07–12/10/2009.

Teaching.Courses Taught

- Undergraduate
 - Finite Mathematics
 - Spring 2008. (Math 2, UCLA)
 - Linear Algebra
 - Fall 2006. (Math 33A, UCLA)
 - Linear Algebra
 - Spring 2006. (Math 115A, UCLA)
 - Optimization.
 - Fall 2007, Winter 2007, Summer 2006, Fall 2005. (Math 164, UCLA)
 - Introduction to DE
 - Winter 2010, Winter 2011, Winter 2012 (Math 201, UofA)
 - Fall 2010, Fall 2011 (Math 334, UofA)
 - Introduction to PDE
 - Winter 2009. (Math 337, UofA)
- Graduate Courses
 - Partial Differential Equations
 - Fall 2008, Fall 2009, Fall 2010, Fall 2011 (Math 527, UofA)

Course Design**Mentoring.**

- Undergraduate
 - 1D models of the 3D Navier-Stokes equations. 06/2007 – 08/2007.
- Graduate
 - Mohammad Niksirat (05/2009 –)
- Postdoc
 - Zhichun Zhai (01/2010 – 06/2012)

Professional Service.Referee for

Annales de l'Institut Henri Poincaré: Nonlinear Analysis; Communications on Pure and Applied Analysis; Discrete and Continuous Dynamical Systems A; Journal of Mathematical Analysis and Applications; Journal of Mathematical Fluid Mechanics; Journal of Physics A; Journal of Scientific Computing; Mathematical Research Letters; Mathematical Review; Nonlinear Analysis TMA; Nonlinear Analysis RWA; Nonlinearity; NSERC Discovery Proposal;

Memberships.

- Society for Industrial and Applied Mathematics (SIAM)
- American Mathematical Society (AMS)
- Canadian Mathematical Society (CMS)

Last Modified: July 9, 2013.