



Pingwen Zhang

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Education

1988 - 1992 **Ph.D.** in mathematics, Peking University
Adviser: Ying, Long-An

Work Experience

2001- **Executive Deputy Director**, Center for Computational Science & Engineering, Peking University
1999- **Director**, Department of Scientific and Engineering Computing,
School of Mathematical Sciences, Peking University
1996- **Professor**, School of Mathematical Sciences, Peking University
1994 - 1996 **Associate Professor**, School of Mathematical Sciences, Peking University
1992 - 1994 **Lecturer**, School of Mathematical Sciences, Peking University

Research Fields

Multiscale modeling of complex fluids
Multiscale analysis and computation
Moving mesh methods and applications

Honors and Awards

2002 **Changjiang Scholar**
Award for outstanding Chinese scholars in all fields.
1999 **Feng Kang Prize of Scientific Computing**
Honor for significant contributions in scientific computing

Professional Activities

2006 - **Associate Director**, Scientific Committee of the Computational Physics Lab,
Institute of Applied Physics and Computational Mathematics
2004 - **Vice President**, China Society for Industry and Applied Mathematics (CSIAM)
2004 - **Chair**, Scientific Committee of China Society for Industry and Applied Mathematics (CSIAM)
2006 - **Scientific Committee member**, National Lab in Large Scale Scientific Computing
2002 - 2006 **Vice President**, China Society for Computational Mathematics
2001 - 2006 **Associate Director**, Scientific Committee of the National Lab in Large Scale Scientific Computing
2005 - **Visiting Professor , research collaborator**, Jilin University
2004 - **Visiting Professor , research collaborator**, Xiangtan University
2004 - **Visiting Professor , research advisor**, Suzhou University
1999 - 2001 **Visiting Professor , research advisor**, Tsinghua University

Extended Visits

2004 **Visiting Research Scientist**, Applied and Computational Mathematics, Princeton University (3 months)
2002 **Visiting Research Scientist**, Applied and Computational Mathematics, Princeton University (2 months)
1999 **Visiting Scholar**, Department of Applied Mathematics, California Institute of Technology (2 months)
1997 **Visiting Scholar**, Department of Applied Mathematics, California Institute of Technology (10 months)
1995 **Visiting Scholar**, Department of Applied Mathematics, California Institute of Technology (11 months)

Editorial Board Activities

2007 Journal of Computational Mathematics
2006 Communications in Computational Physics
2005 Communications in Mathematical Sciences
2005 SIAM Journal on Numerical Analysis

Selected Papers

Multiscale modeling of complex fluids

1. Dan Hu, Pingwen Zhang and Weinan E, *Continuum theory of a moving membrane*, **Physical Review E** 75 (4): Art. No. 041605 Part 1 Apr. (2007)
2. Haijun Yu and Pingwen Zhang, *A kinetic-hydrodynamic simulation of microstructure of liquid crystal polymers in plane shear flow*, **Journal of Non-Newtonian Fluid Mechanics** 141 (2-3): 116-127 Feb. 15 (2007)
3. Tiejun Li and Pingwen Zhang, *Mathematical analysis of multi-scale models of complex fluids*, **Communications in Mathematical Sciences** 5 (1): 1-51 Mar. (2007)
4. Dongzhuo Zhou, Pingwen Zhang and Weinan E, *Modified models of polymer phase separation*, **Physical Review E** 73 (6): Art. No. 061801 Part 1 Jun. (2006)
5. Hui Zhang and Pingwen Zhang, *Local existence for the FENE-dumbbell model of polymeric fluids*, **Archive for Rational Mechanics and Analysis**, 181 (2): 373-400 Jul. (2006)
6. Tiejun Li and Pingwen Zhang, *Convergence analysis of BCF method for Hookean dumbbell model with finite difference scheme*, **Multiscale Modeling & Simulation**, 5 (1): 205-234 (2006)
7. Hailiang Liu, Hui Zhang and Pingwen Zhang, *Axial symmetry and classification of stationary solutions of Doi-Onsager equation on the sphere with Maier-Saupe potential*, **Communications in Mathematical Sciences**, 3: 201-218, (2005)
8. Chong Luo, Hui Zhang and Pingwen Zhang, *The structure of equilibrium solutions of one-dimensional Doi equation*, **Nonlinearity**, 18, 379-389, (2005)

Multiscale analysis and computation

1. Pingbing Ming and Pingwen Zhang, *Analysis of the heterogeneous multiscale method for parabolic homogenization problems*, **Mathematics of Computation** 76 (257): 153-177 (2007)
2. Weinan E, Pingbing Ming and Pingwen Zhang, *Analysis of the heterogeneous multiscale method for elliptic homogenization problems*, **Journal of the American Mathematical Society** 18 (1): 121-156, (2005)
3. Weinan E, Tiejun Li and Pingwen Zhang, *Well-posedness for the dumbbell model of polymeric fluids*, **Communications in Mathematical Physics**, 248 (2): 409-427, (2004)

Moving mesh methods and applications

1. Yana Di, Ruo Li, Tao Tang, and Pingwen Zhang, *Moving mesh methods for singular problems on a sphere using perturbed harmonic mappings*, **SIAM Journal on Scientific Computing**, 28, 1490-1508 (2006)
2. Yana Di, Ruo Li, Tao Tang and Pingwen Zhang, *Moving mesh finite element methods for the incompressible Navier-Stokes equations*, **SIAM Journal on Scientific Computing**, 26 (3): 1036-1056, (2005)
3. Huazhong Tang, Tao Tang and Pingwen Zhang, *An adaptive mesh redistribution method for nonlinear hamiltonian-jacobi equations in two and three dimensions*, **Journal of Computational Physics**, 188 (2) 543 - 572, (2003)
4. Rou Li, Tao Tang and Pingwen Zhang, *A moving mesh finite element algorithm for singular problems for two and three space dimensions*, **Journal Computational Physics**, 177, 365-393 (2002)
5. Rou Li, Tao Tang and Pingwen Zhang, *Moving mesh methods in multiple dimensions based on harmonic maps*, **Journal of Computational Physics**, 170, 562-588 (2001)

Other topics

1. Xia Ji, Tiao Lu T, Wei Cai and Pingwen Zhang, *Discontinuous Galerkin time domain (DGTD) methods for the study of 2-D waveguide-coupled microring resonators*, **Journal of Lightwave Technology**, 23 (11): 3864-3874 (2005)
2. Tiao Lu, Wei Cai and Pingwen Zhang, *Discontinuous Galerkin time-domain method for GPR simulation in dispersive media*, **IEEE Transactions on Geoscience and Remote Sensing**, 43 (1): 72-80, (2005)
3. Tiao Lu, Pingwen Zhang and Wei Cai, *Discontinuous Galerkin methods for dispersive and lossy Maxwell's equations and PML boundary conditions*, **Journal of Computational Physics**, 200 (2): 549-580, (2004)
4. Thomas Y. Hou and Pingwen Zhang, *Convergence of a boundary integral method for 3-D water waves*, **Discrete and Continuous Dynamical Systems Series B**, Vol. 2, Number 1, 1-34 (2002)
5. Zhenhuan Teng and Pingwen Zhang, *Optimal L^1 -rate of convergence for viscosity method and monotone scheme to piecewise constant solution with shocks*, **SIAM Journal on Numerical Analysis**, Vol. 34, 3, 959-978, (1997)
6. Thomas Y. Hou, Zhenhuan Teng and Pingwen Zhang, *Well-posedness for linearized motion of 3-D water waves far from equilibrium*, **Communications in Partial Differential Equations**, 21 (9 & 10), 1551-1585, (1996)
7. Zhenhuan Teng, Long-an Ying and Pingwen Zhang, *Convergence of variable-elliptic-vortex method for Euler equations*, **SIAM Journal on Numerical Analysis**, Vol 32 No. 3, 754-774, (1995)
8. Long-an Ying and Pingwen Zhang, *Fully discrete convergence estimates for vortex methods in bounded domains*, **SIAM Journal on Numerical Analysis**, Vol 31, No. 2, 344-361, (1994).