

Curriculum Vitae

Yinhua Xia

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Education

- *Ph.D.* in Computational Mathematics, University of Science and Technology of China, Hefei, Anhui, P.R. China, July 2008.
Thesis title: Development of discontinuous Galerkin method for nonlinear problems and time discretization methods
Advisor: Professor Chi-Wang Shu
- *B.Sc.* in School of Mathematical Sciences, Nankai University, Tianjin, P.R. China, June 2001.

Academic Experience

- Postdoctoral Research Associate: Division of Applied Mathematics, Brown University, July 2008 – present.
- Research Assistant: Department of Civil Engineering, University of Hong Kong, Apr. 2007 – March 2008.
- Research Assistant: Department of Mathematics, University of Science and Technology of China, Sep. 2005 – Jan. 2007.
- Teaching Assistant: Department of Mathematics, University of Science and Technology of China, Sep. 2003 – Jan. 2007.

Research Interests

- Numerical methods for partial differential equations:
 - Finite difference/volume essentially non-oscillatory (ENO) and weighted ENO (WENO) methods and finite element discontinuous Galerkin methods (DG) for convection dominated problems.
 - Finite element discontinuous Galerkin (DG) methods for wave equations and gradient flows.
 - Efficient time discretization.

- Model and simulation of pedestrian flows.
- Model and simulation of magma flows in the mantle.
- Numerical solution of Eikonal equations and Hamilton-Jacobi equations.
- Numerical solution of Allen-Cahn and Cahn-Hilliard type equations.
- Numerical solution of nonlinear Schrödinger type equations.

Publications in Refereed Journals

1. D. Xiao, J.X. Ma, Y. Li, Y. Xia and M.Y. Yu, *Evolution of nonlinear dust-ion-acoustic waves in an inhomogeneous plasma*, Physics of Plasmas **13** (2006), article number 052308.
2. Y. Xia, Y. Xu and C.-W. Shu, *Local Discontinuous Galerkin Methods for the Cahn-Hilliard type equations*, Journal of Computational Physics, **227** (2007), pp.472-491.
3. Y. Xia, Y. Xu and C.-W. Shu, *Efficient time discretization for local discontinuous Galerkin methods*, Discrete and Continuous Dynamical Systems - Series B, **8** (2007), pp.677-693.
4. Y. Xia, S.C. Wong, M.P. Zhang, C.-W. Shu and W.H.K. Lam, *An efficient discontinuous Galerkin method on triangular meshes for a pedestrian flow model*, International Journal for Numerical Methods in Engineering, **76** (2008), pp. 337-350.
5. Y. Xia, Y. Xu and C.-W. Shu, *Application of the local discontinuous Galerkin method for the Allen-Cahn/Cahn-Hilliard system*, Communications in Computational Physics, **5** (2009), pp. 821-835.
6. L. Huang, Y. Xia, S.C. Wong, C.-W. Shu, M. Zhang and W.H.K. Lam, *A dynamic continuum model for bi-directional pedestrian flows*, Proceedings of the Institution of Civil Engineers, Engineering and Computational Mechanics, **162** (2009), pp.67-75.
7. Y. Xia, S.C. Wong and C.-W. Shu, *Dynamic continuum pedestrian flow model with memory effect*, Physical Review E, v79 (2009), article number 066113.
8. Y. Xia, Y. Xu and C.-W. Shu, *Local discontinuous Galerkin methods for the generalized Zakharov system*, Journal of Computational Physics, to appear, doi:10.1016/j.jcp.2009.10.029.

Publications in Refereed Proceedings

1. Y. Xia, L. Huang, S.C. Wong, M. Zhang, C.-W. Shu and W.H.K. Lam, *The follow-the-crowd effect in a pedestrian flow model*, the Proceedings of the 12th International Conference of Hong Kong Society for Transportation Studies, December 2007, Hong Kong, pp.309-317.
2. Y. Liang, A. Schiemenz, Y. Xia and M. Parmentier, *High porosity harzburgite and dunite channels for the transport of compositionally heterogeneous melts in the mantle: II. Geochemical consequences*, submitted to AGU Fall meeting, 2009.

Conferences/Workshops

- Invited Talk:
 - The 12th International Conference of Hong Kong Society for Transportation Studies, December 8-10, 2007
Presentation: *The Follow-the-Crowd Effect in a Pedestrian Flow Model.*
- Participant:
 - International Workshop on Scientific Computing, ON THE OCCASION OF Cui Jun-Zhi's 70 TH BIRTHDAY , June 7-8, 2008, Institute of Computational Mathematics, Chinese Academy of Sciences, Beijing, China.
 - International Conference on Applied Mathematics: Modeling, Analysis and Computation, June 1-5, 2008, City University of Hong Kong, Hong Kong.
 - The 8th Congress on Computational Mathematics of China, Sichuan University, Chengdu, Sichuan P.R. China, Oct. 25-29, 2007.
 - International Conference On Spectral and High Order Methods (ICOSAHOM07), Institute of Computational Mathematics Chinese Academy of Sciences, Beijing, P.R. China June 18- 22, 2007.
 - Workshop on discontinuous Galerkin method and its applications, Beijing International Center for Computational Physics, June 13-17, 2007, Beijing, P.R. China.
 - Summer school in numerical analysis, University of Science and Technology of China, Hefei, P.R. China, May 23-Jun. 26, 2005
 - Workshop on Adaptive Method for Compressible Flows, University of Science and Technology of China, Anhui, Hefei, P.R. China, June 28 – July 2, 2004.

Awards and Honors

- Hua Wei Graduate Student Scholarship, 2007, University of Science and Technology of China.

Computer Experience

- Operating systems: Unix, Linux, Windows.
- Programming languages: FORTRAN, C/C++, Matlab.
- Experience in high performance scientific computing and in parallel computing using MPI on parallel computers.
- Software: working knowledge of standard business and mathematical software, including Matlab, Mathematica, Tecplot, LAPACK, BLAS, \LaTeX , MSWord etc.