

CURRICULUM VITAE

Jie Shen

Current Address

Department of Mathematics
Purdue University
West Lafayette, IN 47907, USA

tel: 1-765-494-1923, fax: 1-765-494-0548
email: shen@math.purdue.edu
<http://www.math.purdue.edu/~shen>

Professional Preparation

Peking University	Computational Mathematics	B.S. 1982
Université de Paris-Sud	Numerical Analysis	Ph.D. 1987 (Adviser: R. Temam)
Indiana University	Applied Mathematics	PostDoc (8/1987 – 7/1991)

Professional Appointments

Aug. 1991 – Jun. 1997 Assistant Professor, Department of Mathematics, Penn State University.

Jul. 1997 – Jun. 2001 Associate Professor, Department of Mathematics, Penn State University.

Jul. 2001 – Aug. 2001 Professor, Department of Mathematics, Penn State University.

Aug. 2001 – July 2002: Professor, Department of Mathematics, University of Central Florida.

Aug. 2002 – : Professor, Department of Mathematics, Purdue University.

Jan. 2012 – : Director, Center for Computational and Applied Mathematics, Purdue University.

Guest Professorships

July 2002 – : Guest Professor, School of Mathematical Science, Xiamen University, China.

Selected Visiting Professorship (\geq one month): Centre National de la Recherche Scientifique in France, Université de Bordeaux in France (three times), National University of Singapore, Hong Kong University of Science and Technology, Hong Kong Baptist University, Université de Poitiers in France, Universitat Politècnica de Catalunya in Spain, University of Texas at Austin, IMA at University of Minnesota, Chinese Academy of Sciences, McGill University.

Honors and Awards

- Fulbright Award: *McGill University Research Chair in Computational Methods for Partial Differential Equations*, 2008.

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- Changjiang Chair Professorship, Ministry of Education of China, 2009.
- (Inaugural) Research Award, College of Science, Purdue University, 2013.
- Elected Fellow of the American Mathematical Society, 2017.

Current Research Grants

- NSF DMS 1620262: Fast Spectral Methods and their Applications, July. 2015 – June 2018. PI: J. Shen. Total amount \$180,000.
- NSF grant DMS-1419053: Collaborative Research: Phase-field models, algorithms and simulations for multiphase complex fluids, July 2014 – June 2017. PI: J. Shen. Total amount \$150,000.
- AFOSR grant: Accurate and Efficient Spectral Methods for Higher-dimensional and Fractional Differential Equations. Jan. 1, 2016 – Dec. 31, 2018. PI: J. Shen. Total amount \$330,772.55.

Past Research Grants

- Grant from Rolls-Royce: Interpolative Chemical Equilibrium Surrogate Model, 01/01/2015-12/24/2015. PI: Jie Shen; Co-PI: Suchuan Dong. Total amount \$60,788.24.
- Grant from Rolls-Royce: Improvement on interpolative Chemical Equilibrium Surrogate Model, 12/25/2015-03/31/2016. PI: Jie Shen; Co-PI: Suchuan Dong. Total amount \approx \$8000.
- NSF grant DMS-1217066: Fast Spectral Methods and their Applications, Aug. 2012 – July 2015. PI: J. Shen. Total amount \$180,000.
- Subcontract from Argonne National Lab for the “High-Order Algorithms and Modeling for Electromagnetics Systems”, PI: Jie Shen, \$53,000, Feb.-Sep. 2014.
- AFOSR grant FA9550-11-1-0328: Sparse Spectral Methods and Applications to Kinetic Equations Sep 30, 2011 – Mar. 31 2014. PI: J. Shen. Total amount \$320,000.
- Subcontract from Argonne National Lab for the “Computational Materials and Chemical Sciences Network (CMCSN) Program”, PI: Jie Shen, \$60,000, Sep. 2011-Aug. 2014.
- IMA grant for “Midwest Numerical Analysis Day”, May 7-8, 2011. PI: J. Shen, Co-PIs: Peijun Li and Jianlin Xia. Total amount \$5,000.
- NSF grant DMS-1002618: International Conference on Advances in Partial Differential Equations and their Applications, June 1, 2010-May 31, 2011. PI: Shouhong wang, Co-PIs: Jie Shen and Xiaoming Wang. Total amount \$27,000.

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- NSF grant DMS-0915066: Fast Spectral Methods and their Applications, Sep. 2009 – Aug. 2012. PI: J. Shen. Total amount \$329,052.
- AFOSR grant FA9550-08-1-0416: Solving Boltzmann and Fokker-Planck equations using sparse representation May. 1 2008 – Nov. 30 2010. PI: J. Shen. Total amount \$306,879.
- NSF grant DMS-0610646: Fast Spectral Methods and their Applications, Sep. 2006 – Aug. 2009. PI: J. Shen. Total amount \$302,372.
- NSF grant DMS-0722502: NSF Scientific Computing Research Environments for the Mathematical Sciences (SCREMS), 08/01/2007 — 07/31/2008. PI: Jie Shen, Co-PIs: Steven Dong, Juan Santos, Dongbin Xiu. Total amount: \$99,409.
- 2007-2008 **Purdue Provost Faculty Fellowship** for Study in a Second Discipline, one semester of teaching release plus \$3,500.
- NSF DMS-0509665, Collaborative research: Multiphase interfacial hydrodynamics, PI. Jie Shen. July 2005 — Nov. 2008. Total amount: \$92,942.18.
- NSF DMS-0456286, Collaborative Research: FRG: Ferroelectric phenomena in soft matter systems, PI. Dan Phillips, Co-PIs: Patricia Bauman and Jie Shen. Aug. 2005 — Jul. 2008, \$329,346.
- **Purdue Computer Research Institute** Special Incentive Research Grant: Numerical Investigation of the Leray-Alpha Turbulence Model for Large Eddy Simulations, PI: Steven Frankel, Co-PI: J. Shen. One-year graduate support (7/1/06 – 6/30/07).
- **Purdue Research Foundation Grant:** Innovative Numerical Methods for Forward-Backward Stochastic Differential Equations, PIs: Jin Ma and Jie Shen. Twelve-month support for a graduate student (6/1/06 – 5/31/07).
- NSF grant DMS-0311915: Fast Spectral Methods and their Applications, Aug. 2003 – July 2006. PI: J. Shen. Total amount \$180,482.
- **Purdue Computer Research Institute** Special Incentive Research Grant: Efficient and Stable Time Discretization Methods: Applications to Neutronics Thermal-Hydraulics Reactor Analysis and Multiphase Monolayers, PI: J. Shen, Co-PI: Tom Downar (School of Nuclear Engineering) (7/1/04 – 6/30/06). Total amount: \$25,878.
- AMS Fan Fund Award, Apr. 2006, \$5,000.
- NSF grant DMS-0074283: Fast Spectral Methods and their Applications, Aug. 2000 – July 2003. PI: J. Shen. Total amount \$130,000.
- NSF-INT “US-Spain Cooperative Research INT 9732637: Dynamic control and parametric resonance in hydrodynamic systems, July 1998 – June 2001. PIs: J. Lopez and J. Shen. Total amount: \$16,000.

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- Research Grant from Air Product, Inc: Computer simulation of bubble growth and foam structures. Oct. 1997–Dec. 2000. PIs: Long-Qing Chen and Jie Shen. Total amount: ~\$170,000.
- NSF “Interdisciplinary Grants in Mathematical Sciences” DMS-9721413: Numerical Simulation of Materials Microstructural Evolution, Jan. 1999 – Sep. 2000. PI: J. Shen. Total amount: \$75,000.
- NSF grant DMS-9706951: Dynamic control and parametric resonance in hydrodynamic systems: a theoretical, computational and experimental investigation. Aug. 1997 – July 2000. PIs: John Lopez and Jie Shen. Total amount: \$94,000.
- NSF grant DMS-9623020: Fast Spectral-Galerkin Algorithms for Elliptic Problems and Efficient Solution Techniques for Unsteady Navier-Stokes Equations, Aug. 1996 – July 1999. PI: J. Shen. Total amount \$58,000.
- NSF grant INT-9423693: US-China workshop on inertial manifolds and approximate inertial manifolds and related numerical algorithms, May 1995 – Apr. 1996. PI: J. Shen. Total amount \$17,996.
- NSF grant DMS-9205300: Numerical solution of differential equations in mechanics, Sep. 1992 – Feb. 1996. PIs: D. Arnold and J. Shen. Total amount: \$255,000.
- NSF SCREMS grant DMS-9206985: Mathematical Sciences Computing Research Environments, July 1992 – Dec. 1994. PIs: G. Andrews, D. Arnold, W. Pritchard, J. Shen, S. Tavener and J. Xu. Award amount: \$30,793.

Selected Professional Services

Member of the editorial boards:

- Co-editor-in-chief: **Journal of Mathematical Study**, 2014 —
- **Applied Numerical Mathematics**, 2015 —
- **Communications in Mathematical Science**, 2015 —
- **Journal of Scientific Computing**, 2009 —
- **Mathematics of Computation**, Jan. 2005 — Jan. 2016
- **Communications in Computational Physics**, 2005 —
- **International Journal of Numerical Analysis and Modeling**, 2004 —
- **Discrete and Continuous Dynamical Systems, Series B**, 2001 —

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International Project Review Panel: INRIA, France, Mar. 27-29, 2013.

Member of the Scientific Committee on the conference series: International Conference on High-Order and Spectral Methods (ICOSAHOM), 2014 —

Member of the advisory board of the Army MURI project on "Fractional PDEs for Conservation Laws and Beyond: Theory, Numerics, and Applications", 2015 —

Member of the Global Organizing Committee of 11th AIMS Conference, Orlando, USA, July 1-5, 2016.

Vice-Chair of the Advisory Committee of Chinese Computational Mathematics Society, 2016—

Conference/Workshop Organizations (as one of main organizers):

- International Workshop on Inertial Manifolds, Approximate Inertial Manifolds and Related Numerical Algorithms, Xian, China, June 1995.
- Workshop Series on "Recent Advances in Spectral Methods and their Approximations":
 - First Workshop, Xiamen University, China, June 14-16, 2007.
 - Second Workshop, WuYiShan, China, May 29-31, 2008.
 - Third Workshop, Shanghai Normal University, July 14-16, 2011.
 - Fourth Workshop, Xiamen University, Nov 2-4, 2013.
 - Fifth Workshop, JiangSu Normal University, Oct. 9-11, 2015.
- **American Institute of Mathematics** workshop on "Ferroelectric Phenomena in Soft Matter Systems", May, 12-16, 2008.
- International Conference on "Advances in Partial Differential Equations and Their Applications", Fudan University, Shanghai, May 31-June 4, 2010.
- The First Cross-Straight workshop on Scientific Computing, Xiamen University, Xiamen, China, Aug. 2-5, 2010.
- 2011 Midwest Numerical Analysis Day, Purdue University, May 7-8, 2011.
- International Conference on Computational Sciences, Shanghai, China, July 16-20, 2012.
- International Conference on Modeling, Analysis and Computation, Xiamen, China, July 21-25, 2012.
- International Workshop on High-Dimensional Problems and Applications, Sun Yeh-San University, China, Nov 16-17, 2013.
- Indiana-Illinois Workshop on Scientific Computing, Apr 26, 2014.

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- International Workshop on the Finite Element/Spectral Methods (IWFSM2014), Shanghai Normal University, May 16-18, 2014.
- Sino-French Conference on Computational and Applied Mathematics, Xiamen University, China, June 2-5, 2014.
- Second China-Japan-Korea (A3) Foresight Workshop, Xiamen, China, Nov. 26-29, 2015.
- Workshop on Recent Advance on Computational Mathematics, Jinjiang University, China, July 15-17, 2016.
- IMACS 2016 World Congress, Xiamen, China, Dec 10-14, 2016.
- Workshop on Mathematical Approaches to Interfacial Dynamics in Complex Fluids, Banff, Canada, June 25-30, 2017.

Member of the organizing committees:

- Seventh International Conference on Domain Decomposition Methods in Scientific and Engineering Computing, October 1993, The Pennsylvania State University.
- International Conference on Scientific & Engineering Computing, March 19-23, 2001, Beijing, China.
- International Symposium on Computational and Applied PDEs, July 2-7, 2001, Zhangji-ajie, China.

Member of the scientific committees:

- Applied Mathematics Workshop for Materials Studies and Industrial Applications, Oct. 24-26, 1996, The Pennsylvania State University.
- Second International Conference on Scientific and Engineering Computing for Young Chinese Scientists, July 1-4, 1999, Beijing, China.
- International Conference on Computational Mathematics, July 2-6, 2001, Pohang, South Korea.
- Third International Workshop on Scientific Computing and Applications in January 6-9, 2003, City University of Hong Kong.
- Summer School on Applications of Advanced Mathematical and Computational Methods to Atmospheric and Oceanic Problems, July 14-26, 2003.
- International Conference on Numerical and Applied PDEs, Jilin University, June 23-28, 2004.

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- International Conference on Scientific Computing (ICSC05) Nanjing, China, June 4-8, 2005.
- International Conference on Partial Differential Equations and Numerical Methods Kunming, China, Dec. 17-22, 2005.
- International Conference on Partial Differential Equations and Numerical Analysis, Changsha, Hunan, 22-26 June, 2006.
- “Workshop on “Ferroelectric phenomena in liquid crystals”, Kent State University, June 19-28, 2007.
- Program on “Mathematical Theory and Numerical Methods for Computational Materials Simulation and Design”, Institute of Mathematical Sciences, National University of Singapore, July 1 – Aug. 31, 2009.
- IMACS 2013 World Congress, El Escorial, Spain, Aug 26-30, 2013.
- Ninth International Conference on Scientific Computing and Applications, Xi’an Jiaotong University, China, June 11-15, 2014.
- The third international symposium on phase-field method, State College, PA, Aug 26-29, 2014.
- Tenth International Conference on Scientific Computing and Applications, Fields Institute, Toronto, June 6-10, 2016.

PUBLICATIONS

Citations:

- In Google Scholar: ≈ 9500
- In MathSciNet: ≈ 3000

H-index:

- In Google Scholar: 49
- In MathSciNet: 28

Books:

1. Jie Shen, Tao Tang & Li-Lian Wang. *Spectral Methods: Algorithms, Analysis and Applications*, Springer Series in Computational Mathematics, Vol. 41, **Springer**, Aug. 2011.
2. Jie Shen & Tao Tang. *Spectral and High-Order Methods with Applications*, **Chinese Science Press**, 2006.

Papers Published in Refereed Journals:

- [1] Jie Shen. A spectral-tau approximation for the Stokes and Navier-Stokes equations. *Math. Model. Numer. Anal.*, 22(4):677–693, 1988.
- [2] Jie Shen. Dynamics of regularized cavity flow at high Reynolds numbers. *Appl. Math. Lett.*, 2(4):381–384, 1989.
- [3] B. Michaux, J. M. Rakotoson, and Jie Shen. On the existence and regularity of solutions of a quasilinear mixed equation of Leray-Lions type. *Acta Appl. Math.*, 12:287–316, 1989.
- [4] B. Michaux, J. M. Rakotoson, and Jie Shen. On the approximation of a quasilinear equation. *Math. Model. Numer. Anal.*, 24(2):211–234, 1989.
- [5] Jie Shen and R. Temam. A new fractional scheme for the approximation of incompressible flows. *Mat. Aplic. Comput.*, 8(1):3–22, 1989.
- [6] Jie Shen. Convergence of the approximate attractors for a fully discrete scheme for the reaction-diffusion equations. *Numer. Func. Anal. Opt.*, 10(11-12):1213–1234, 1989.
- [7] Jie Shen. On an unconditionally stable scheme for the unsteady Navier-Stokes equations. *J. Comput. Math.*, 8(3):276–288, 1990.
- [8] Jie Shen. Numerical simulation of the regularized driven cavity flows at high Reynolds numbers. *Comput. Methods in Appl. Mech. Eng.*, 80:273–280, 1990.
- [9] Jie Shen. Long time stability and convergence for fully discrete nonlinear Galerkin methods. *Appl. Anal.*, 38:201–229, 1990.

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- [10] Jie Shen. Hopf bifurcation of the unsteady regularized driven cavity flows. *J. Comput. Phys.*, 95:228–245, 1991.
- [11] Jie Shen. Projection schemes for the Navier-Stokes equations. *Appl. Math. Let.*, 5:35–37, 1992.
- [12] Jie Shen. On error estimates of the projection methods for the Navier-Stokes equations: first-order schemes. *SIAM J. Numer. Anal.*, 29:57–77, 1992.
- [13] Jie Shen. On error estimates of some higher order projection and penalty-projection methods for Navier-Stokes equations. *Numer. Math.*, 62:49–73, 1992.
- [14] Jie Shen. A remark on the projection-3 method. *Intern. J. Numer. Methods in Fluids*, 16:249–253, 1993.
- [15] Jie Shen. Remarks on the pressure error estimates for the projection methods. *Numer. Math.*, 67:513–520, 1994.
- [16] Jie Shen. Efficient spectral-Galerkin method I. direct solvers for second- and fourth-order equations by using Legendre polynomials. *SIAM J. Sci. Comput.*, 15:1489–1505, 1994.
- [17] Jie Shen and R. Temam. Nonlinear Galerkin methods using Chebyshev or Legendre polynomials I. one dimensional case. *SIAM J. Numer. Anal.*, 32:215–234, 1995.
- [18] Jie Shen. Efficient spectral-Galerkin method II. direct solvers for second- and fourth-order equations by using Chebyshev polynomials. *SIAM J. Sci. Comput.*, 16:74–87, 1995.
- [19] Jie Shen. On error estimates of the penalty method for the unsteady Navier-Stokes equations. *SIAM J. Numer. Anal.*, 32:386–403, 1995.
- [20] Jie Shen. On fast Poisson solver, inf-sup constant and iterative Stokes solver by Legendre-Galerkin method. *J. Comput. Phys.*, 116:184–188, 1995.
- [21] Jie Shen. On error estimates of projection methods for the Navier-Stokes equations: second-order schemes. *Math. Comp.*, 65:1039–1065, July 1996.
- [22] Jie Shen. A new pseudo-compressibility method for the Navier-Stokes equations. *Appl. Numer. Math.*, 21:71–90, 1996.
- [23] W. B. Liu and Jie Shen. A new efficient spectral Galerkin method for singular perturbation problems. *J. Sci. Comput.*, 11:411–437, 1996.
- [24] Jie Shen. Efficient spectral-Galerkin methods III. polar and cylindrical geometries. *SIAM J. Sci. Comput.*, 18:1583–1604, 1997.

PUBLICATIONS

- [25] J.M. Lopez and Jie Shen. An efficient spectral-projection method for the Navier-Stokes equations in cylindrical geometries I. axisymmetric cases. *J. Comput. Phys.*, 139:308–326, 1997.
- [26] J.M. Lopez and Jie Shen. Numerical simulation of incompressible flows in cylindrical geometries using a spectral projection method. *Intern. J. of Appl. Sciences & Comput.*, 5:25–40, 1998.
- [27] L.Q. Chen and Jie Shen. Applications of semi-implicit Fourier-spectral method to phase-field equations. *Comput. Phys. Comm.*, 108:147–158, 1998.
- [28] Jie Shen. Efficient spectral-Galerkin methods IV. spherical geometries. *SIAM J. Sci. Comput.*, 20:1438–1455, 1999.
- [29] Jie Shen and Shouhong Wang. A fast and accurate numerical scheme for the primitive equations of the atmosphere. *SIAM J. Numer. Anal.*, 36:719–737, 1999.
- [30] J. Zhu, L.Q. Chen, Jie Shen and V. Tikare. Coarsening kinetics from a variable mobility Cahn-Hilliard equation - application of semi-implicit Fourier spectral method. *Phys. Review E.*, 60:3564–3572, 1999.
- [31] Jie Shen, T. Tachim Mejdó and Shouhong Wang. On a wind-driven, double-gyre, quasi-geostrophic ocean model: Numerical simulations and structural analysis. *J. Comput. Phys.*, 155:387–409, 1999.
- [32] Jie Shen, Feng Wang, and Jinchao Xu. An optimal finite element multigrid preconditioner for Chebyshev-collocation method. *Appl. Numer. Math.*, 33:471-477, 2000.
- [33] Jie Shen. A new fast Chebyshev-Fourier algorithm for the Poisson-type equations in polar geometries. *Appl. Numer. Math.*, 33:183-190, 2000.
- [34] J.M. Lopez, F. Marques and Jie Shen. Endwall effects in a periodically forced centrifugally unstable flows. *Fluid Dyn. Rev.*, 27:91-108, 2000.
- [35] Benyu Guo and Jie Shen. Laguerre-galerkin method for nonlinear partial differential equations on a semi-infinite interval. *Numer. Math.*, 86:635–654, 2000.
- [36] Jie Shen. Stable and efficient spectral methods in unbounded domains using Laguerre functions. *SIAM J. Numer. Anal.*, 38:1113-1133, 2000.
- [37] Benyu Guo, Jie Shen and Zhongqing Wang. A rational approximation and its applications to differential equations on the half line. *J. Sci. Comp.* 15:117-147, 2000.
- [38] J. Zhu, L.Q. Chen, Jie Shen and V. Tikare. Microstructure dependence of diffusional transport. *Computational Materials Science*, 20:37-47, 2001.
- [39] Chun Liu and Jie Shen. On liquid crystal flows with free-slip boundary conditions. *Discrete and Continuous Dynamical Systems*, 7:307-318, 2001.

PUBLICATIONS

- [40] J. Zhu, L.Q. Chen, Jie Shen and V. Tikare. Computing the effective diffusivity using a spectral method. *Materials Science and Engineering A*. 311:135-141, 2001.
- [41] J.M. Lopez, F. Marques and Jie Shen. A periodically forced flow displaying symmetry breaking via a three-tori gluing bifurcation and two-tori resonances. *Physica D*, 156:81-97, 2001.
- [42] Qiang Du, Benyu Guo and Jie Shen. Fourier-spectral approximation to a dissipative system modeling the flow of liquid crystals. *SIAM J. Numer. Anal.* 39:735–762, 2001. A Corrigendum for this paper is published in *SIAM J. Numer. Anal.*, 41:796-798, 2003)
- [43] Benyu Guo and Jie Shen. On Spectral Approximations Using Modified Legendre Rational Functions: Application to Korteweg-de Vries Equation on the Half Line. *Indiana J. Math.* 50:181-204, 2001.
- [44] J. Zhu, L.Q. Chen, Jie Shen. Morphological evolution during phase separation and coarsening with strong inhomogeneous elasticity. *Modelling Simul. in Mater. Sci. Eng.*, 9:499-511, 2001.
- [45] J.L. Guermond and Jie Shen. Quelques résultats nouveaux sur les méthodes de projection. *C. R. Acad. Sci., Paris, Sér. I*. t.333:1111-1116, 2001.
- [46] Benyu Guo, Jie Shen and Zhongqing Wang. Chebyshev rational spectral and pseudospectral method on a semi-infinite interval. *Int. J. Numer. Methods Eng.* 53:65-84, 2002.
- [47] F. Marques, J. M. Lopez and Jie Shen. Mode interactions in an enclosed swirling flow: a double Hopf between azimuthal wavenumbers 0 and 2. *J. Fluid Mech.*, 455:263-281, 2002.
- [48] J.M. Lopez, F. Marques, and Jie Shen. An efficient spectral-projection method for the Navier-Stokes equations in cylindrical geometries II. Three dimensional cases *J. Comput. Phys.* 176:384-401, 2002.
- [49] J.M. Lopez, J.E. Hart, F. Marques, S. Kittelman and Jie Shen. Instability and mode interactions in a differentially-driven rotating cylinder. *J. Fluid Mech.* 462:383-409, 2002.
- [50] J.L. Guermond and Jie Shen. Velocity-correction projection methods for incompressible flows. *SIAM J. Numer. Anal.* 41:112-134, 2003.
- [51] Benyu Guo, Jie Shen and Chenglong Xu. Spectral and pseudospectral approximations using Hermite functions: application to the Dirac equation. *Advances in Comp. Math.* 19:35-55, 2003.

PUBLICATIONS

- [52] Chun Liu and Jie Shen. A Phase Field Model for the Mixture of Two Incompressible Fluids and its Approximation by a Fourier-Spectral Method. *Physica D*. 179:211-228, 2003.
- [53] D. J. Seol, S. Y. Hu, Y. L. Li, J. Shen, L. Q. Chen and K. H. Oh. Three-dimensional phase-field modeling of spinodal decomposition in constrained films. *Metals and Materials International*, 9:61-66, 2003.
- [54] Jie Shen. A New Dual-Petrov-Galerkin Method for Third and Higher Odd-order Differential Equations: Application to the KDV Equation. *SIAM J. Numer. Anal.*, 41:1595-1619, 2003.
- [55] J.L. Guermond and Jie Shen. A class of truly consistent splitting schemes for incompressible flows. *J. Comput. Phys.*, 192:262-276, 2003.
- [56] D. J. Seol, S. Y. Hu, Y. L. Li, J. Shen, L. Q. Chen and K. H. Oh. Computer simulation of spinodal decomposition in constrained films *Acta Materialia*, 51:5173-5185, 2003.
- [57] J.M. Lopez, F. Marques and Jie Shen. Complex dynamics in a short Taylor-Couette annulus with the top endwall stationary and the bottom rotating. in *J. Fluid Mech.* 501:327-354, 2004.
- [58] Jie Shen and Li-Lian Wang. Error analysis for mapped Legendre spectral and pseudospectral methods. *SIAM J. Numer. Anal.* 42:326-349, 2004.
- [59] J.L. Guermond and Jie Shen. On the error estimates of rotational pressure-correction projection methods. *Math. Comp.* 73:1719-1737, 2004.
- [60] Pengtao Yue, James J. Feng, Chun Liu and Jie Shen. A diffuse-interface method for simulating two-phase flows of complex fluids. *J. Fluid Mech.* 515:293-317, 2004.
- [61] Benyu Guo, Jie Shen and Chenglong Xu. Generalized Laguerre approximation and its applications to exterior problems. *J. Comp. Math.*, 23:113-130, 2005.
- [62] J.L. Guermond, P. Mineev and Jie Shen. Error analysis of pressure-correction schemes for the Navier-Stokes equations with open boundary conditions. *SIAM J. Numer. Anal.*, 43:239-258, 2005.
- [63] Jie Shen and Li-Lian Wang. Spectral Approximation of the Helmholtz equation with high wave numbers. *SIAM J. Numer. Anal.*, 43:623-644, 2005.
- [64] Weizhu Bao and Jie Shen. A Fourth-order time-splitting Laguerre-Hermite pseudo-spectral method for Bose-Einstein condensates. *SIAM J. Sci. Comput.*, 26:2010-2028, 2005.
- [65] Jae-Hong Pyo and Jie Shen. Normal Mode Analysis of Second-Order Projection Methods for Incompressible Flows. *Dis. Cont. Dyn. Sys. B.*, 5:817-840, 2005.

PUBLICATIONS

- [66] Jie Shen and Li-Lian Wang. Error analysis for mapped Jacobi spectral methods. *J. Sci. Comput.*, 24:183-218, 2005.
- [67] Pengtao Yue, James J. Feng, Chun Liu and Jie Shen. Interfacial Forces and Marangoni Flow on a Nematic Drop Retracting in an Isotropic Fluid. *Journal of Colloid and Interface Science*, 290:281-288, 2005.
- [68] Pengtao Yue, James J. Feng, Chun Liu and Jie Shen. Diffuse-interface simulations of drop coalescence and retraction in viscoelastic fluids. *J. Non-Newtonian Fluid Mech.* 129:163-176, 2005.
- [69] Pengtao Yue, James J. Feng, Chun Liu and Jie Shen. Viscoelastic effects on drop deformation in steady shear. *J. Fluid Mech.* 540:427-437, 2005.
- [70] Pengtao Yue, James J. Feng, Chun Liu and Jie Shen. Transient Drop Deformation upon Startup of Shear in Viscoelastic Fluids. *Phys. Fluids*, 17:123101, 2005.
- [71] R. L. Sani, Jie Shen, O. Pironneau & P. M. Gresho. Pressure boundary condition for the time dependent incompressible Navier-Stokes equations. *Inter. J. Numer. Methods in Fluids*, 50:673-682, 2006.
- [72] Benyu Guo, Jie Shen and Li-Lian Wang. Optimal Spectral-Galerkin Methods Using Generalized Jacobi Polynomials. *J. Sci. Comput.* 27:305-322 (2006)
- [73] Leszek Demkowicz & Jie Shen. A few new (?) facts about the infinite elements. *Comput. Methods Appl. Mech. Eng.* 195:3572-3590, 2006.
- [74] J.L. Guermond, P. Mineev and Jie Shen. An Overview of Projection Methods for Incompressible Flows. *Comput. Methods Appl. Mech. Eng.* 195:6011-6045, 2006.
- [75] David Nicholls and Jie Shen. A Stable, High-Order Method for Two-Dimensional Bounded-Obstacle Scattering. *SIAM J. Sci. Comput.* 28:1398-1419 (2006)
- [76] Jie Shen and Li-Lian Wang. Laguerre and composite Legendre-Laguerre Dual-Petrov-Galerkin methods For third-order equations. *DCDS-B.* 6:1381-1402 (2006).
- [77] Xiaofeng Yang, James J. Feng, Chun Liu and Jie Shen. Numerical simulations of jet pinching-off and drop formation using an energetic variational phase-field method. *J. Comput. Phys.* 218:417-428, 2006
- [78] Dongbin Xiu and Jie Shen. An efficient spectral method for acoustic scattering from rough surfaces. *Comm. in Comput. Phys.* 2:54-72 (2007)
- [79] Jae-Hong Pyo and Jie Shen. Gauge Uzawa methods for incompressible flows with variable density. *J. Comput. Phys.* 221:181-197, 2007.
- [80] Olivier Goubet & Jie Shen. On the dual Petrov-Galerkin formulation of the KdV equation in a finite interval. *Adv. Diff. Eqn.* 12:221-239 (2007)

PUBLICATIONS

- [81] Jie Shen and Li-Lian Wang. Fourierization of the Legendre-Galerkin method and a new space-time spectral method. *Appl. Numer. Math.* 57:710-720, 2007.
- [82] Jie Shen and Li-Lian Wang. Analysis of a Spectral-Galerkin Approximation to the Helmholtz Equation in Exterior Domains. *SIAM J. Numer. Anal.* 45:1954-1978, 2007.
- [83] Qirong Fang, David Nicholls and Jie Shen. A Stable, High-Order Method for Three-Dimensional Bounded-Obstacle Scattering. *J. Comput. Phys.* 224:1145-1169, 2007.
- [84] Jie Shen, Jiahong Wu and Yuanming Yuan. Eventual periodicity for the KdV equation on a half-line. *Physica D*. DOI: 10.1016/physd.2007.02.003.
- [85] Jie Shen and Xiaofeng Yang. Error estimates for finite element approximations of consistent splitting schemes for incompressible flows. *DCDS-B*, 8:663-676, 2007.
- [86] Yuen-Yick Kwan and Jie Shen. An Efficient Direct Parallel Elliptic Solver by the Spectral Element Method. *J. Comput. Phys.* 225:1721-1735, 2007.
- [87] Jie Shen and Li-Lian Wang. Legendre and Chebyshev Dual-Petrov-Galerkin Methods for Hyperbolic equations. *Int. J. Numer. Methods Eng.* 196:3785-3797, 2007.
- [88] Chunfeng Zhou, James J. Feng, Pengtao Yue, Chun Liu and Jie Shen. Heart-shaped bubbles rising in anisotropic liquids. *Phys. of Fluids* 19, 041703, 2007.
- [89] Chun Liu, Jie Shen and Xiaofeng Yang. Dynamics of defect motion in Nematic Liquid Crystal Flow: Modeling and Numerical Simulation. *Commun. Comput. Phys.* 2:1184-1198, 2007.
- [90] Yuanming Yuan, Jie Shen and Jiahong Wu. A Dual-Petrov-Galerkin Method For The Kawahara-Type Equations. *J. Sci. Comput.* 34:48-63, 2008.
- [91] Jean-Luc Guermond, Jie Shen and Xiaofeng Yang. Error analysis of fully discrete velocity-correction methods for incompressible flows. *Math. Comp.* 77:1387-1405 (2008)
- [92] Benyu Guo and Jie Shen. Irrational approximations and their applications to partial differential equations in exterior domains. *Adv. Comput. Math.* 28:237-267, 2008.
- [93] Mejdí Azaiez, Jie Shen, Chuanju Xu and Qingqu Zhuang. A Laguerre-Legendre spectral method for the Stokes problem in a semi-infinite channel. *SIAM J. Numer. Anal.* 47:271-292, 2008.
- [94] Jin Ma, Jie Shen and Yanhong Zhao. On Numerical Approximations of Forward-Backward Stochastic Differential Equations. *SIAM J. Numer. Anal.* 46:2636-2661, 2008.

PUBLICATIONS

- [95] Xiaofeng Yang, Zhenglu Cui, Greg Forest, Qi Wang and Jie Shen. Dimensional robustness & instability of sheared, semi-dilute, nano-rod dispersion. *SIAM Multiscale Model. Simul.* 7:622-654, 2008.
- [96] Weizhu Bao and Jie Shen. A Generalized-Laguerre-Hermite Pseudospectral Method for Computing Symmetric And Central Vortex States in Bose-Einstein Condensates. *J. Comput. Phys.* 227:9778-9793, 2008.
- [97] Jie Shen and Li-Lian Wang. Some Recent Advances On Spectral Methods For Unbounded Domains. *Commun. Comput. Phys.* 5:195-241, 2009.
- [98] Ben-yu Guo, Jie Shen and Li-Lian Wang. Generalized Jacobi Polynomials/Functions And Their Applications. *Appl. Numer. Math.* 59:1011-1028, 2009.
- [99] Jie Shen and Li-Lian Wang. On Spectral Approximations in Elliptical Geometries Using Mathieu Functions. *Math. Comp.* 78:815-844, 2009.
- [100] Dongbin Xiu and Jie Shen. Efficient Stochastic Galerkin Methods for Random Diffusion Equations. *J. Comput. Phys.* 228:266-281, 2009.
- [101] Jie Shen, Li-Lian Wang and Huiyuan Li. A triangular spectral element method using fully tensorial rational basis functions *SIAM J. Numer. Anal.* 47:1619-1650, 2009.
- [102] Qirong Fang, Jie Shen and Li-Lian Wang. An Efficient and Accurate Spectral Method for Acoustic Scattering in Elliptic Domains. *Numerical Mathematics: Theory, Methods and Applications.* 2:258-274, 2009.
- [103] D.P. Nicholls and Jie Shen. A Rigorous Numerical Analysis of the Transformed Field Expansion Method *SIAM J. Numer. Anal.* 47:2708-2723, 2009.
- [104] Weizhu Bao, Hailiang Li and Jie Shen. A generalized-Laguerre-Fourier-Hermite pseudospectral method for computing the dynamics of rotating Bose-Einstein condensates *SIAM J. Scient. Comput.* 31:3685-3711, 2009.
- [105] E. A. Eliseev, A. N. Morozovska, S. V. Kalinin, Y. L. Li, J. Shen, M. D. Glinchuk, L. Q. Chen, and V. Gopalan. Surface Effect o Domain Wall Width in Ferroelectrics. *J. Appl. Phys.*, v. 106, 084102, 2009.
- [106] Jie Shen and Xiaofeng Yang. An efficient moving mesh spectral method for the phase-field model of two-phase flows. *J. Comput. Phys.* 228:2978-2992, 2009.
- [107] Qingqu Zhuang, Jie Shen, Chuanju Xu. A coupled Legendre-Laguerre spectral-element method for the Navier-Stokes equations in unbounded domains. *J. Sci. Comput.* 42:1-22, 2010.
- [108] J. Shen and X. Yang. A phase-field model and its numerical approximation for two-phase incompressible flows with different densities and viscosities. *SIAM J. Sci. Comput.*, 32:1159-1179, 2010.

PUBLICATIONS

- [109] Huiyuan Li and Jie Shen. Optimal error estimates in jacobi-weighted sobolev spaces for polynomial approximations on the triangle. *Math. Comp.*, 79:1621-1646, 2010.
- [110] J. Park, F. Chen and J. Shen. Modeling and simulation of switchings in ferroelectric liquid crystals. *DCDS, Series A*, 26:1419-1440, 2010.
- [111] J. Shen and X. Yang. Numerical approximations of Allen-Cahn and Cahn-Hilliard equations. *DCDS-A*, 28:1669-1691, 2010.
- [112] Y. Kwan, J. Park and J. Shen. A mathematical and numerical study of incompressible flows with a surfactant monolayer. *DCDS, series A*, 28:181-197, 2010.
- [113] S.C. Dong and J. Shen. An Unconditionally stable rotational velocity-correction scheme for incompressible flows. *J. Comput. Phys.* 229:7013-7029, 2010.
- [114] J. Shen and L. Wang. Sparse spectral approximations of high-dimensional problems based on hyperbolic cross. *SIAM J. Numer. Anal.*, 48:1087-1109, 2010.
- [115] J. Shen and Haijun Yu. Efficient spectral sparse grid methods and applications to high dimensional elliptic problems. *SIAM J. Scient. Comput.* 32:3228-3250, 2010.
- [116] J. Shen and X. Yang. Energy stable schemes for the Cahn-Hilliard phase-field model of two-phase incompressible flows. *Chinese Annals of Mathematics, Series B.* 31:743-758 (2010).
- [117] Dinesh A. Shetty, Jie Shen, Abhilash J. Chandy and Steven Frankel. A pressure-correction scheme for rotational Navier-Stokes equations and its application to rotating turbulent flows. *Commun. Comput. Phys.*, 9:740-755, 2011.
- [118] Lizhen Chen, Jie Shen and Chuanju Xu. A triangular spectral method for Stokes equations. *Numer. Math.: Theory, Methods Appl.*, 4:158-179, 2011.
- [119] X. Yang, G. Forest, C. Liu and J. Shen. Shear cell rupture of nematic droplets in a viscous fluid. *J. Non-Newtonian Fluid Mech.* 166:487-499, 2011.
- [120] Lizhen Chen, Jie Shen and Chuanju Xu. Spectral direction splitting schemes for the incompressible Navier-Stokes equations. *East Asia J. Appl. Math.*, 1:215-234, 2011.
- [121] Lizhen Chen, Jie Shen and Chuanju Xu. A unstructured nodal spectral-element method for the Navier-Stokes equations. *Commun. Comput. Phys.*, 12:315-336, 2012.
- [122] Ying He, David Nicholls and J. Shen. An efficient and stable spectral method for electromagnetic scattering from a layered periodic structure. *J. Comput. Phys.*, 231:3007-3022, 2012.
- [123] J. Shen, C. Wang, X. Wang and S. Wise. Second-order convex splitting schemes for gradient flows with Ehrlich-Schwoebel type energy: Application to thin film epitaxy. *SIAM J. Numer. Anal.*, 50:105-125, 2012.

PUBLICATIONS

- [124] J. Shen and Haijun Yu. Efficient spectral sparse grid methods and applications to high-dimensional elliptic equations II. Unbounded domains. *SIAM J. Scient. Comput.* 34:A1141-A1164, 2012.
- [125] J. Shen and Haijun Yu. On the approximation of the Fokker-Planck Equation of FENE dumbbell model, I: a new weighted formulation and an optimal spectral-Galerkin algorithm in 2-D. *SIAM J. Numer. Anal.* 50:1136-1161, 2012.
- [126] Peijun Li and J. Shen. Analysis of the Scattering by an Unbounded Rough Surface. *Math. Methods Appl. Sci.*, 35:2166-2184, 2012.
- [127] Jie Shen and Zhongqing Wang. Error analysis of the Strang time-splitting Laguerre-Hermite/Hermite collocation methods for The Gross-Pitaevskii equation. *Foundations of Comp. Math.*, 13:99-137, 2013.
- [128] Feng Chen and Jie Shen. Efficient spectral-Galerkin methods for systems of coupled second-order equations and their applications. *J. Comput. Phys.*, 231:5016-5028, 2012.
- [129] S.C. Dong and J. Shen. A time-stepping scheme involving constant coefficient matrices for phase-field simulations of two-phase incompressible Flows with large density ratios. *J. Comput. Phys.*, 231:5788-5804, 2012.
- [130] Feng Chen and Jie Shen and Haijun Yu. A new spectral element method for pricing european options by partial integro-differential equations. *J. Sci. Comput.*, 52:499-518, 2012.
- [131] Xiaofeng Yang, Greg Forest, Huiyuan Li, Chun Liu, Jie Shen, Qi Wang and Falai Chen. Numerical Investigation of the Dynamics of drop formation and pitch-off using a phase-field model for two-phase complex fluids. *J. Comput. Phys.*, 236:1-14, 2013.
- [132] Feng Chen and Jie Shen. Efficient energy stable schemes with spectral discretization in space for anisotropic Cahn-Hilliard systems. *Commun. Comput. Phys.*, 13:1189-1208, 2013.
- [133] C. Collins, Jie Shen and S. Wise. An efficient, energy stable scheme for the Cahn-Hilliard-Brinkman system. *Commun. Comput. Phys.*, 13:929-957, 2013.
- [134] Feng Chen and Jie Shen. A GPU Parallelized Spectral Method For Elliptic Equations. *J. Comput. Phys.* 250:555-564, 2013
- [135] Jing An and Jie Shen. A Fourier-spectral-element method for transmission eigenvalue problems in radially stratified media. *J. Sci. Comput.*, 57:670-688, 2013
- [136] Jing An and Jie Shen. An Efficient and Stable Spectral-Element Method for Acoustic Scattering by an Obstacle. *East Asia J. Appl. Math.*, 3:190-208, 2013.

PUBLICATIONS

- [137] Ye Cao, S. Bhattacharya, Jie Shen, C. A. Randall and Longqing Chen. Role of polaron hopping in leakage current behavior of a SrTiO₃ single crystal. *J. Appl. Phys.* V. 114, 224102, 2013.
- [138] Jie Shen, Xiaofeng Yang and Qi Wang. Mass and volume conservation in phase field models for binary fluids. *Commun. Comput. Phys.* 13:1045-1065, 2013.
- [139] Jie Shen and Xiaofeng Yang. Decoupled energy stable schemes for phase-field models of two-phase complex fluids. *SIAM J. Sci. Comput.* 36:B122-B145, 2014.
- [140] Jing An and Jie Shen. Efficient Spectral methods for Transmission eigenvalues and Estimation of the Index of Refraction. *J. Math. Study*, 47:1-20, 2014.
- [141] Jie Shen, Li-Lian Wang and Haijun Yu. Approximations By Orthonormal Mapped Chebyshev Functions For Higher-Dimensional Problems In Unbounded Domains. *J. Comput. Appl. Math.* 265:264-275, 2014.
- [142] Lizhen Chen, Jie Shen, Chuanju Xu and Lishi Luo. Parallel spectral-element direction splitting method for incompressible Navier-Stokes equations. *Appl. Numer. Math.*, 84:66-79, 2014.
- [143] Ye Cao, Jie Shen C. A. Randall and Longqing Chen. Phase-field modeling of switchable diode-like current-voltage characteristics in ferroelectric BaTiO₃. *Appl. Phys. Lett.*, 104:182905,2014.
- [144] Ye Cao, Jie Shen, C. A. Randall and Longqing Chen. Effect of ferroelectric polarization on ionic transport and resistance degradation in BaTiO₃ by the phase-field approach. *Journal of the American Ceramic Society*, 97:35683575, 2014.
- [145] Ying He and Jie Shen. Unconditionally Stable Pressure-Correction Schemes for a Linear Fluid-Structure Interaction Problem. *Numer. Math.: Theory, Methods and Appl.* 7:537-554, 2014.
- [146] Ying He, Peijun Li and Jie Shen. A New Spectral Method for Numerical Solution of the Unbounded Rough Surface Scattering Problem. *J. Comput. Phys.* 275:608-625, 2014.
- [147] Chun Liu, Jie Shen and Xiaofeng Yang. Decoupled energy stable schemes for a phase-field model of two-phase incompressible flows with variable density. *J. Sci. Comput.*, 62:601-622, 2015.
- [148] Fei Liu and Jie Shen. Stabilized Semi-Implicit Spectral Deferred Correction Methods for Allen-Cahn and Cahn-Hilliard Equations. *Math. Methods Appl. Sci.*, 38:45644575, 2015.
- [149] Lina Hu, Claude-Michel Brauner, Jie Shen and G.I. Sivashinsky. Modeling and Simulation of Fingering Pattern Formation In a Combustion Model. *Math. Models Methods Appl. Sci.* 25:685-720, 2015.

PUBLICATIONS

- [150] Wei Li, Li-Shi Luo and Jie Shen. Accurate solution and approximations of the linearized BGK equation for steady Couette flow. *Computers & Fluids*. 111:18-32, 2015.
- [151] Jie Shen, Xiaofeng Yang and Haijun Yu. Efficient energy stable numerical schemes for a phase field moving contact line model. *J. Comput. Phys.* 284:617-630, 2015.
- [152] Jie Shen and Xiaofeng Yang. Decoupled energy stable schemes for phase-field models of two-phase incompressible flows. *SIAM J. Numer. Anal.* 53:279-296, 2015.
- [153] Taylan Senqul, Jie Shen and Shouhong Wang. Pattern Formations of 2D Rayleigh–Bénard Convection with No-Slip Boundary Conditions for the Velocity at the Critical Length Scales. *Math. Methods Appl. Sci.* 38:3792-3806, 2015.
- [154] Jing An and Jie Shen. Spectral approximation to a transmission eigenvalue problem and its applications to an inverse problem. *Comput. Math. Appl.* 69:1132-1143, 2015.
- [155] Henk Dijkstra, Taylan Sengul, Jie Shen and Shouhong Wang. Dynamic transitions of quasi-geostrophic channel flow. *SIAM J. Appl. Math.* 75:2361-2378, 2015.
- [156] Lina Ma, Jie Shen and Li-Lian Wang. Spectral Approximation of Time-Harmonic Maxwell Equations in Three-dimensional Exterior Domains. *International Journal of Numerical Analysis & Modeling*. 12:366-383, 2015.
- [157] S.C. Dong and J. Shen. A Pressure Correction Scheme for Generalized Form of Energy-Stable Open Boundary Conditions for Incompressible Flows. *J. Comput. Phys.* 291:254-278, 2015.
- [158] Zhiping Mao and Jie Shen. A semi-implicit spectral deferred correction method for two water wave models with nonlocal viscous term and numerical study of their decay rates. *Science China Mathematics (Chinese)*. 45:1153-1168, 2015.
- [159] Changtao Sheng, Jie Shen and Zhongqing Wang. Generalized Jacobi spectral-Galerkin method for nonlinear Volterra integral equations with weakly singular kernels. *J. Math. Study*. 48:315-329, 2015.
- [160] Jie Shen, Yingwei Wang and Haijun Yu. Efficient spectral-element methods for electronic Schrödinger equation in one spatial dimension. *Proceedings for the Sparse Grids and Applications 2014*. Springer, 2015.
- [161] Jia Zhao, Xiaofeng Yang, Jie Shen and Qi Wang. A decoupled energy stable scheme for a hydrodynamic phase-field model of mixtures of nematic liquid crystals and viscous fluids. *J. Comp. Phys.* 305:539-556, 2016.
- [162] Zhiping Mao and Jie Shen. Efficient Spectral-Galerkin Methods for Fractional Partial Differential Equations with Variable Coefficients. *J. Comput. Phys.*, 307:243-261, 2016.

PUBLICATIONS

- [163] Ying Chen and Jie Shen. Efficient, adaptive energy stable schemes for the incompressible Cahn-Hilliard Navier-Stokes phase-field models. *J. Comput. Phys.*, 308:40-56, 2016.
- [164] Sheng Chen, Jie Shen and Li-Lian Wang. Generalized Jacobi functions and their applications to fractional differential equations. *Math. Comp.* 85:1603-1638, 2016.
- [165] Ye Cao, Jie Shen, C. A. Randall and Longqing Chen. Effect of multi-domain structure on ionic transport, electrostatics, and current evolution in BaTiO₃ ferroelectric capacitor. *Acta Materialia*. 112:224-230, 2016.
- [166] Lina Hu, Lina Ma and Jie Shen. Efficient Spectral-Galerkin Method and Analysis for Elliptic PDEs with Non-Local Boundary Conditions. *J. Sci. Comput.* 68:417-437, 2016.
- [167] Jie Shen, Yingwei Wang and Jianlin Xia. Fast structured direct spectral methods for differential equations with variable coefficients. *SIAM J. Sci. Comput.* 38(1), A28-A54, 2016.
- [168] M. Azaiez, F. Jelassi, M. Mint Brahim and J. Shen. Two Phases Stefan Problem with Smoothed Enthalpy. *Comm. Math. Sci.*, 14:1625-1641, 2016.
- [169] Zhiping Mao, Sheng Chen and Jie Shen. Efficient and accurate spectral methods using general Jacobi functions for solving Riesz Fractional Differential Equations. *Appl. Numer. Math.* 106:165-181, 2016.
- [170] Heejun Choi and Jie Shen. Efficient splitting schemes for magneto-hydrodynamic equations. *Science China Mathematics (English)*, 59:1495-1510, 2016.
- [171] Jie Shen and Yingwei Wang. Müntz-Galerkin methods and applications to mixed Dirichlet-Neumann boundary value problems. *SIAM J. Sci. Comput.*, 38:A2357-A2381, 2016.
- [172] Changtao Sheng and Jie Shen. A hybrid spectral element method for Volterra integral equations with weakly singular kernel. *Science China Mathematics (Chinese)*. 46:1017-1036, 2016.

Papers Accepted in Refereed Journals:

- [173] Jie Shen, Tao Tang and Jiang Yang. On the maximum principle preserving schemes for the generalized Allen-Cahn Equation. To appear in *Comm. Math. Sci.*
- [174] S. Colbert-Kelly, G.B. McFadden, D. Phillips and J. Shen. Numerical Analysis and Simulation for a Generalized Planar Ginzburg-Landau Equation in a Circular Geometry. To appear in *Comm. Math. Sci.*

PUBLICATIONS

- [175] Haydar Alici and Jie Shen. Highly accurate pseudospectral approximations of the prolate spheroidal wave equation for any bandwidth parameter and zonal wavenumber. To appear in *J. Sci. Comput.*

Papers Submitted to Refereed Journals:

- [176] Yongyong Cai, Heejun Choi and Jie Shen. Error estimates for time discretizations of Cahn-Hilliard and Allen-Cahn phase-field models for two-phase incompressible flows. Submitted to *Numer. Math.*
- [177] Lina Ma, Jie Shen, Li-Lian Wang and Zhiguo Yang. Wavenumber explicit analysis of spectral-Galerkin methods for time-harmonic Maxwell equations in exterior domains. Submitted to *IMA J. Numer. Anal.*
- [178] Yongyong Cai and Jie Shen. Error estimates for a fully discretized scheme to a Cahn-Hilliard phase-field model for two-phase incompressible flows Submitted to *Math. Comp.*
- [179] Jie Shen, Yingwei Wang and Jianlin Xia. Fast structured Jacobi-Jacobi transforms. Submitted to *SIAM J. Sci. Comput.*
- [180] Yongyong Cai, Jie Shen and Xiang Xu. A stable scheme and its convergence analysis for a 2D dynamic Q-tensor model of nematic liquid crystals. Submitted to *Math. Models Methods Appl. Sci.*
- [181] Sheng Chen, Jie Shen and Li-Lian Wang. Solving tempered fractional differential equations on unbounded domains using generalized Laguerre functions. Submitted *J. Sci. Comput.*
- [182] Xiaofeng Yang, Jia Zhao, Qi Wang and Jie Shen. Numerical Approximations for a three components Cahn-Hilliard phase-field Model based on the Invariant Energy Quadratization method. Submitted to M3AS.
- [183] Changtao Sheng and Jie Shen. A hybrid spectral element method for fractional two-point boundary value problems. Submitted to *Numerical Mathematics: Theory, Methods and Applications.*
- [184] Zhiping Mao and Jie Shen. Hermite spectral methods for fractional PDEs in unbounded domains. Submitted to *SIAM J. Sci. Comput.*
- [185] Jie Shen, Jie Xu and Pingwen Zhang. Approximations on $SO(3)$ by Wigner D-matrix and applications. Submitted to *SIAM J. Numer. Anal.*

Book Chapters:

PUBLICATIONS

1. Chun Liu, Jie Shen, James J. Feng, Pengtao Yue. Variational Approach in Two-Phase Flows of Complex Fluids: Transport and Induced Elastic Stress, Chapter 11 in “Mathematical models and methods in phase transitions”, edited by A. Miranville, Nova publications, 2005.
2. James J. Feng, Chun Liu, Jie Shen, Pengtao Yue. A Phase-Field Formulation for Interfacial Dynamics of Complex Fluids: Advantages and Challenges. p. 1-26 in *Modeling of Soft Matter*, IMA Volume 141, Springer New York, edited by M. T. Calderer and E. M. Terentjev, 2005.
3. Jie Shen. Modeling and numerical approximation of two-phase incompressible flows by a phase-field approach, in Lecture Note Series v.22, IMS, National University of Singapore, edited by W. Bao and Q. Du, 2011.

LIST of CONFERENCE and SEMINAR TALKS

Invited Conference Talks:

1. IMACS First International Conference on Computational Physics: Boulder, Co, June 1990. *“Hopf bifurcation of the regularized driven cavity flow”*.
2. Second International Conference on Industrial and Applied Mathematics: Washington DC, July 1991. *“On the error estimates of the projection methods for the Navier-Stokes equations”*.
3. 7th IMACS International Conference on Computer Methods for Partial Differential Equations: New Brunswick, NJ, June 1992. *“Projection method and pressure stabilization method for the Navier-Stokes equations”*.
4. SIAM Annal Meeting, Los Angeles, CA, July 1992. *“Nonlinear Galerkin method using Chebyshev and Legendre polynomials”*.
5. One of the Principal Lecturers at “Summer Workshop on Partial Differential Equations and Numerical Analysis”, Nan Kai University, June 1 – June 12, 1993. *“On the approximation of Stokes and Navier-Stokes equations”*.
6. International Conference on Nonlinear Evolution Equations, Beijing, June 1993. *“Nonlinear Galerkin method using Chebyshev and Legendre polynomials”*.
7. Three Rivers Applied Math Colloquium, Carnegie Mellon University, April 9-10, 1994. *“On a class of pseudo-compressibility methods for the Navier-Stokes equations”*.
8. International Conference on Nonlinear Evolution Equations and Infinite Dimensional Dynamical Systems, Beijing, June 15-22, 1994. *“Pseudo-compressibility methods for the Navier-Stokes equations”*.
9. Workshop on theoretical and applied fluid dynamics, Computing Center, Beijing, June 20-July 1, 1994. *“Numerical solution of viscous incompressible flow.”*
10. International Workshop on Inertial Manifolds and Approximate Inertial Manifolds and Related Numerical Algorithms, Xian, June 19-22, 1995. *“On the stability and accuracy of the nonlinear Galerkin methods”*.
11. 1995 SIAM Annual Meeting, Charlotte, NC, Oct. 23-26, 1995. *“Pseudo-compressibility methods for the computation of incompressible flows.”*
12. Fifth workshop on numerical solutions of fluid flow in spherical geometries, Breckenridge, Colorado, June 12-16, 1996. *“Efficient spectral-Galerkin algorithms for the primitive equations of the atmosphere”*.
13. Workshop on Dynamical Systems Approach to Ocean/Atmosphere Sciences, Isaac Newton Institute in Cambridge University, Aug. 26-30, 1996. *“A new solution technique for the Primitive equations of the Atmosphere”*.

LIST of CONFERENCE and SEMINAR TALKS

14. IMA Workshop on “Parallel Solution of PDE”, University of Minnesota, June 9–13, 1997. *“Fast spectral-Galerkin method and its applications”*.
15. First Conference of Young Chinese Mathematicians in North America, University of California at Berkeley, June 28–July 2, 1997. *“Fast spectral-Galerkin method and its applications”*.
16. IMA Workshop on “Large Scale Dynamical Systems”, University of Minnesota, Sept. 29–Oct. 3, 1997. *“Numerical simulation of incompressible flows in enclosed cylinder(s) using a spectral-projection method”*.
17. Material Research Society Annual Spring Meeting, San Francisco, Apr. 13–17, 1998. *“Application of semi-implicit Fourier spectral methods for phase field equations”*.
18. Joint meeting of 19th Annual CAMS and 13th CSFD, Vancouver, May 27–31, 1998. *“Numerical simulation of incompressible flows in enclosed cylinder(s) using a spectral-projection method”*.
19. Workshop on “Mathematical Problems in Meteorology and Oceanography”, Indiana University at Bloomington, Nov. 9–12, 1998. *“A fast spectral-Galerkin method for the primitive equations of atmosphere”*.
20. Workshop on Scientific Computing, Hong Kong City University, Dec. 7–10, 1998. *“Spectral-projection method for Incompressible Flows”*.
21. Workshop on “Incompressible fluid flows: numerical methods and applications”, Los Alamos, April 12–14, 1999. *“A survey on pseudo-compressibility methods for incompressible flows”*.
22. SIAM Third Conference on Mathematical Aspects of Materials Science, Philadelphia, May 22-24, 2000. *“Elastic effects during ordering and phase transition”*.
23. p and hp finite element methods: mathematics and engineering practice, St. Louis, May 31–June 2, 2000. *“Spectral methods for problems in unbounded domains”*.
24. Workshop on Penalty Method, Bordeaux, France, June 5-6, 2000. *“Fast spectral method and a first attempt at using a penalty formulation with spectral discretization”*.
25. One of the principal speakers at the Summer School on “Advances in Partial Differential Equations and Applications”, El Escorial, Spain July 17–21, 2000.
26. Conference on Nonlinear Problems in Applied Sciences, Bloomington, IN, Sept. 15-17, 2000. *“Some new developments on projection methods: pressure-correction and velocity-correction schemes”*.
27. International workshop on scientific and engineering computing, Singapore, July 2nd, 2001.

LIST of CONFERENCE and SEMINAR TALKS

28. One of the principle lecturers at the Summer School in Beijing University, Beijing, China, July 9-July 20, 2001.
29. International Workshop on Numerical Linear Algebra, Numerical Methods for PDES and Optimization, Curitiba, Brazil, Aug. 20-23, 2001.
30. EUROMECH/ERCOFTAC Colloquium: Spectral Methods and Timestepping Schemes for Incompressible Flows in Complex Geometries, Toulouse, France, Oct. 18-19, 2001.
31. AMS-MAA Joint Annual Meeting at San Diego, CA, Jan. 5-9, 2002.
32. Summer school for Applied Mathematics in Dalian, July, 2002.
33. AMS regional meeting in Orlando, FL, Nov. 9-10, 2002.
34. Workshop on Numerical Methods for PDEs in Beijing University, Jan. 4-5, 2003.
35. Third International Workshop on Scientific Computing in City University of Hong Kong, Jan. 6-9, 2003.
36. AMS regional meeting in Bloomington, IN, Apr. 4-6, 2003.
37. Workshop on Perspectives on incompressible flows. Comparison of different computational strategies, University of Maryland, Apr. 7-11, 2003.
38. Workshop on "Ondes de Surface", Universite de Bordeaux, France, May 27-28, 2003.
39. Two mini-symposium talks at the 5th International Congress on Industrial and Applied Mathematics, Sydney, July 7-11, 2003.
40. Workshop on Mathematical Aspects of Computational Fluid Dynamics at Oberwolfach Institute, Nov. 9-15, 2003.
41. Workshop on "Multiscale computational methods", University of Florida, Feb 29-Mar 2, 2004.
42. 6th International Conference on Spectral and High Order Methods, Brown, June 21-25, 2004.
43. Workshop on "Developments in Navier-Stokes Equations & Turbulence Research", National Singapore University, Dec. 13-16, 2004.
44. Tutorial on "Nanoscale Material Interfaces: Experiment, Theory and Simulation", National Singapore University, Dec. 17-21, 2004.
45. International Conference on Scientific Computing, Nanjing, China, June 4-8, 2005.
46. International Conference of Nonlinear Evolution Equations and Infinite Dimensional Dynamical Systems, Nanjing, China, June 2-6, 2005.

LIST of CONFERENCE and SEMINAR TALKS

47. Organizer and principle lecturer, “Workshop on numerical simulation of complex fluids”, Academia Sinica, June – Aug. 2005.
48. International conference on ”Mathematics: opportunity and Challenge”, Weihai, China, July 25-29, 2005.
49. The 2nd International Conference on Scientific Computing and Partial Differential Equations & The First East Asia SIAM Conference, Hong Kong, Dec. 12-16, 2005. (Plenary Speaker)
50. International Conference on Partial Differential Equations and Numerical Methods, Kuming, China, Dec. 17-22, 2005. (Plenary Speaker)
51. Banff Workshop on Advances in Computational Scattering, Feb. 19-23, 2006.
52. Spring 2006 Midwest PDE Seminar, Univ. of Illinois at Chicago, Apr. 21-23, 2006. (Plenary Speaker)
53. Banff Workshop on Interfacial Dynamics in Complex Fluids, May 27-June 01, 2006.
54. International Conference on Applied Mathematics and Interdisciplinary Research, Nankai University, June 12-15, 2006.
55. International Conference on Recent Advances in Scientific Computation, Beijing University, June 18-19, 2006.
56. International Conference on Applicable Harmonic Analysis: Approximation and Computation, Beijing, June 17-21, 2006.
57. International Conference on Partial Differential Equations and Numerical Analysis, Changsha, June 22-26, 2006, China. (Plenary Speaker)
58. International Workshop on Scientific Computing, National Taiwan University, Taiwan, June 26–30, 2006.
59. International Workshop on nonlinear problems and their numerical approximations, Jilin University, July 10-11, 2006.
60. Workshop on Scientific Computing, Tsinghua University, July 13-14, 2006.
61. Second International Workshop on Analysis and Numerical Approximation of Singular Problems, Karlovassi, Greece, Sep. 6-9, 2006. (Plenary Speaker)
62. Workshop on Theory and Applications of Fluid Mechanics, University of Cincinnati, Dec. 9-10, 2006.
63. Workshop on on PDEs and Scientific Computing, National University of Singapore, Dec. 15, 2006.

LIST of CONFERENCE and SEMINAR TALKS

64. International conference on "Multiscale Analysis and Applications", Nanyang Technical University, Singapore, Dec. 18–22, 2006.
65. Mini-symposium on "Recent Advances in Computational Scattering", AMS/MAA Joint Meeting at New Orleans, Jan. 5-8, 2007.
66. Mini-symposium on "Recent Developments in Analysis and Numerics of Geophysical Fluid Dynamics Problems", AMS/MAA Joint Meeting at New Orleans, Jan. 5-8, 2007.
67. SIAM Conference on Computational Science & Engineering, Orange County, Feb. 19-23, 2007.
68. Frontiers in Applied and Computational Mathematics, New Jersey Institute of Technology, May 13-16, 2007.
69. International workshop on Recent Advances on Spectral Methods and Related Applications, Xiamen, June 14-16, 2007.
70. The International Conference On Spectral and High Order Methods (ICOSAHOM'07), Beijing, June 18-22, 2007. (Plenary Speaker)
71. Workshop on Ferroelectric Phenomena in Liquid Crystals, Kenn State, June 18–28, 2007.
72. International workshop on computational methods in geosciences, Xi'an Jiaotong University, China, July 5-7, 2007.
73. International Conference on Theoretical and Numerical Fluid Dynamics, III, Vancouver, Aug. 13-17, 2007.
74. Workshop on Bose-Einstein condensation: modeling, analysis, computation and applications, Institute of Mathematical Science, National Singapore University, Nov. 12-16, 2007.
75. Workshop on Multiscale Modeling, Analysis and Simulations, Michigan State, Mar. 27-28, 2008.
76. AMS sectional meeting, Bloomington, IN, Apr. 5-6, 2008.
77. AIM Workshop on "Ferroelectric phenomena in soft matter systems", Paolo Alto, CA, May 12-16, 2008.
78. Huxang International Mathematics Workshop, May 21-25, 2008.
79. Sixth International Conference on Scientific Computing and Applications, Pusan, Korea, June 2-5, 2008. (Plenary Speaker)

LIST of CONFERENCE and SEMINAR TALKS

80. Eighth International Conference on Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing, Montreal, Canada, July 6-11, 2008.
81. AFOSR Computational Mathematics Program Annual Review Workshop, Arlington, VA, Aug 12-15, 2008.
82. AMS-MAA joint meeting, Washington, D.C., Jan 5-9, 2009 (two minisymposium talks).
83. SIAM CS&E meeting, Miami, Florida, Mar 2-6, 2009 (two minisymposium talks).
84. Midwest Numerical Analysis Day, Detroit, Apr 17-18, 2009. (Plenary Speaker)
85. The 8th International Conference On Spectral and High Order Methods (ICOSA-HOM), Trondheim, Norway, June 22-26, 2009 (two minisymposium talks).
86. International Conference on Applied Analysis and Scientific Computation June 25-28, 2009, Shanghai Normal University, Shanghai, China. (Plenary Speaker)
87. Workshop on “Challenges and Advances in Computational Materials Simulations and Design”, National University of Singapore, July 20-24, 2009.
88. Tutorial speaker for the Workshop on “Challenges and Advances in Computational Materials Simulations and Design”, National University of Singapore, July 26-31, 2009.
89. One of the two main instructors at the Summer School on Numerical PDEs at the Institute of Computational Mathematics and Scientific/Engineering Computing, Beijing China, Aug 3-16, 2009.
90. 14th Chinese Conference on Numerical Methods for Fluid Dynamics, Nanchang, China, Aug 4-7, 2009.
91. SIAM conference on Mathematics for Industry, San Francisco, Oct. 9-10, 2009.
92. AMS-MAA joint meeting, San Francisco, Jan 13-16, 2010.
93. AMS sectional meeting at University of Kentucky, Mar. 27-28, 2010.
94. AMS sectional meeting at Saint Paul, Minnesota, Apr. 10-11, 2010.
95. SIAM annual meeting, Pittsburgh, July 12-16, 2010.
96. AFOSR Computational Mathematics Program Review Meeting, Arlington, July 27-30, 2010.
97. Summer School Lecturer (a two-credit course) at Beijing University, Aug. 10-19, 2010.
98. NSF workshop on soft materials, Colorado State University, Sep. 13-17, 2010.

LIST of CONFERENCE and SEMINAR TALKS

99. IMA Tutorial on Numerical Solutions of Partial Differential Equations: Novel Discretization Techniques, Oct. 30-31, 2010.
100. IMA workshop on Numerical Solutions of Partial Differential Equations: Novel Discretization Techniques, Nov. 1-5, 2010.
101. Workshop on Nonstandard Discretizations for Fluid Flows, Banff, Canada, Nov. 22-26, 2010.
102. Fourth International Congress of Chinese Mathematicians, Beijing, China, Dec. 17-22, 2010.
103. SIAM CSE conference, Reno, Nevada, Feb. 28-Mar 3, 2011.
104. 2011 International Conference on Applied Mathematics and Interdisciplinary Research, June 13-15, 2011, Nankai University, Tianjin, China.
105. International Conference on Interdisciplinary Applied and Computational Mathematics, Zhejiang University, Hangzhou, China, June 17-21, 2011.
106. ICIAM conference, Vancouver, Canada, July 18-22, 2011 (two mini-symposium talks).
107. International Conference on PDEs and Numerical Analysis, Guiyang, Aug. 22-24, 2011.
108. Annual meeting of the Chinese Computational Mathematics, Zhenzhou, Sep 18-21, 2011.
109. Workshop on High Dimensional Problems in Materials Science, Acedemy of Sciences, China, Oct. 14, 2011.
110. Workshop on Mathematical Theory and Simulation of Phase Transitions, Beijing International Center for Mathematical Research, Nov. 7-11, 2011.
111. Workshop on Challenge and Modeling of Multiscale Problems in Mechanics and Materials, National University of Singapore, Nov. 14-18, 2011.
112. The Second International Conference on Scientific Computing (ICSC12) Nanjing, China, May 22-25, 2012.
113. AMSS-PolyU Joint Research Institute Second Workshop on Computational Mathematics, Hong Kong, May 25th-26th, 2012.
114. International Conference on Applied Mathematics 2012: Modeling, Analysis and Computation, Hong Kong, May 28-June 1, 2012.
115. Workshop on Scientific Computing, Lanzhou University, June 1-2, 2012.

LIST of CONFERENCE and SEMINAR TALKS

116. The 9th International Conference on Spectral and High Order Methods (ICOSA-HOM), Tunis, Tunisia, June 25-29, 2012 (two minisymposium talks).
117. Sparse Grid 2012, Munich, Germany, July 2-6, 2012.
118. International Conference on Computational Sciences, Shanghai, China, July 16-20, 2012.
119. Second Cross-Straight Workshop on Computational Mathematics, Kaohsiung, Taiwan, July 27-30, 2012.
120. AFOSR Program Review, July 30-Aug. 2, 2012.
121. Chebfun and Beyond, Oxford University, UK, Sep 17-19, 2012.
122. AMS/MAA Joint meeting, San Diego, Jan. 9-12, 2013.
123. Two mini-symposium talks at the SIAM CSE conference, Boston, Feb. 25-28, 2013.
124. South African Symposium on Numerical and Applied Mathematics, Stellenbosch University, South Africa, Apr 3-5, 2013.
125. Workshop on "Current Research in Numerical Analysis", City University of New York, Apr. 25, 2013.
126. Forum on Scientific Computing, LSEC, Beijing, June 3-4, 2013.
127. International Conference on Mathematical Modeling and Computation, May 16-19, Wuhan University, China.
128. 2nd International Conference on Interdisciplinary Applied Mathematics and Computational Mathematics June 19-22, 2013, Hangzhou, China.
129. ICERM workshop on "Issues in Solving the Boltzmann Equation for Aerospace Applications", Providence, June 3-7, 2013.
130. SIAM Materials conference, Philadelphia, June 9-12, 2013.
131. Numerical mathematics and applications to some challenging problems, Loyola university, Sevilla, June 24-26, 2013.
132. Workshop on "Quantized vortices in superfluidity and superconductivity and related problems" at the Wolfgang Pauli Institute (WPI), Vienna, Austria, July 1-5, 2013.
133. Workshop on Mathematical Issues in Liquid Crystals, Peking University, July 6, China, 2013.
134. AFOSR Computational Mathematics Annual Review Meeting, July 29-Aug 1, 2013.

LIST of CONFERENCE and SEMINAR TALKS

135. The Second International Conference on Engineering and Computational Mathematics (ECM2013), Polytechnic University, Hong Kong, Dec 16-18, 2013.
136. International Workshop on the Finite Element/Spectral Methods (IWFSM2014), Shanghai Normal University, China, May 16-18, 2014.
137. Sino-Germany Workshop on Computational Fluid Dynamics, Beijing, China, May 21-27, 2014.
138. Third International Conference on Interdisciplinary Applied and Computational Mathematics, Zhejiang University, Hangzhou, China, June 7-10, 2014.
139. 9th Workshop on Scientific Computing and Applications, Xi'an, China, June 12-15, 2014.
140. ICOSAHOM'14 (two talks), June 23-27, 2014, Salk Lake City, USA.
141. Annual Meeting of Academy of Engineering Physics of China, Aug 19-20, 2014.
142. Korean SIAM Annual Meeting, Jeju, Korea, Nov 20-13, 2014.
143. 5th International Conference on Scientific Computing and PDEs (SCPDE14), Hong Kong, Dec 8-12, 2014.
144. IAS Focused Program on Multiscale Modeling and Simulation of Defect Problems in Materials Science, Hong Kong, Dec 15-19, 2014.
145. 9th International Conference on Computational Physics (two talks), Singapore, Jan 7-11, 2015.
146. Workshop on numerical methods for fractional PDEs, University of Macau, May 22-23, 2015, Macau, China.
147. International Conference on Numerical Partial Differential Equations and Their Applications, May 25-29, 2015, Wuhan University, Wuhan, China.
148. International Conference on Computational Mathematics and Sciences at Xi'an Jiaotong University, China, June 6-8, 2015.
149. Sanya Workshop on nonlinear wave equations, July 6-10, 2015, Sanya, China.
150. ICIAM 2015 (three talks), Aug 10-14, 2015, Beijing, China.
151. Second joint workshop of China-Japan-Korea A3 Foresight Program, Xiamen, China, Nov 26-29, 2015.
152. Principal lecturer at the Spring School on Spectral/Spectral-Element Methods, Beijing Computational Science Research Center, Apr 10-15, 2016.

LIST of CONFERENCE and SEMINAR TALKS

153. Workshop on Multiscale Modeling and its Applications: From Weather and Climate Models to Models of Materials Defects, Fields Institute, Canada, Apr 25-29, 2016.
154. 10th International Conference on Scientific Computing and Applications, Fields Institute, Canada,, June 6-10, 2016.
155. ICOSAHOM'16 (two talks), Rio de Janeiro, Brazil, June 27-July 1, 2016.
156. The 11th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Orlando, Florida, USA, July 1 - July 5, 2016.
157. Workshop on Nonlinear Partial Differential Equations and Scientific Computing, Beijing, China, July 5–10, 2016.
158. Summer School on Computational Mathematics (two talks) at Sichuan University, July 20, 2016.
159. Fourth Cross-Strait Workshop on Computational Mathematics, National Chengkung University, Taiwan, July 25-28, 2016.
160. AFOSR Computational Mathematics Program Review, Arlington, VA, Aug 9-12, 2016.

Invited Colloquium/Seminar Talks since 1991:

1. Math. Dept., Penn State Univ., Jan. 13, 1991. “*Projection methods for the Navier-Stokes equations*”.
2. Math. Dept., Purdue Univ., Jan. 29, 1991. “*On error estimates of projection methods*”.
3. Math. Dept., Univ. of Colorado at Boulder, Feb. 8, 1991. “*Hopf bifurcation for driven cavity flow*”.
4. Math. Dept., Univ. of British Columbia, Feb. 11, 1991. “*Projection methods for the Navier-Stokes equations*”.
5. Math. Dept., Iowa State Univ., Feb. 25, 1991. “*Projection methods for the Navier-Stokes equations*”.
6. Comp. Sci. Dept., Stanford Univ., Feb. 28, 1991. “*On some efficient algorithms for the Navier-Stokes equations*”.
7. Math. Dept., Cincinnati Univ., Mar. 4, 1991. “*Higher order projection and penalty-projection methods*”.
8. Center for Innovative Computing Applications, Indiana Univ., Apr. 10, 1991. “*Hopf bifurcation for driven cavity flow*”.

LIST of CONFERENCE and SEMINAR TALKS

9. Math. Dept., Univ. of Maryland, Mar. 5, 1992. *“Pressure stabilization and projection methods”*.
10. Math. Dept., Univ. of Maryland at Baltimore County, Apr. 30, 1993. *“Efficient spectral method for some elliptic problems”*.
11. Institute of Applied Physics and Computational Mathematics, China, June 15, 1993. *“Approximate inertial manifolds and nonlinear Galerkin methods”*.
12. Computing Center, Academia Sinica, June 16, 1993. *“Pressure stabilization and projection methods”*.
13. Math. Dept., Beijing University, June 17, 1993. *“Nonlinear Galerkin method using Chebyshev and Legendre polynomials”*.
14. Institute of Mathematics, Academia Sinica, June 18, 1993. *“On a class of quasi-compressibility methods for Navier-Stokes equations”*.
15. Institute of System Sciences, Academia Sinica, June 19, 1993. *“Approximate inertial manifolds and nonlinear Galerkin methods”*.
16. Department of Mathematics and Statistics, Simon Fraser University, August 13, 1993. *“Efficient spectral-Galerkin methods for some elliptic problems”*.
17. Department of Mathematics, Hong Kong University of Science and Technology, May 26, 1994. *“Pseudo-compressibility methods for the Navier-Stokes equations”*.
18. Department of Applied Mathematics, Dalian Institute of Technology, June 9, 1994. *“Some topics in computational fluid dynamics.”*
19. Department of Mathematics, Beijing University, July 1, 1994. *“Efficient implementation of spectral Galerkin method.”*
20. Institute of Mathematics and Institute of System Sciences, Academia Sinica, July 6, 1994. *“Pseudo-compressibility Methods for the Navier-Stokes Equations”*.
21. Institute of Scientific Computing and Applied Mathematics, Indiana University, Dec. 2, 1994. *“Spectral-Galerkin method for scientific computation”*.
22. Department of Mathematics, Huadong Normal University, June 15, 1995. *“New developments in the theory of inertial manifold and approximate inertial manifold.”*
23. Research Center for Applied Mathematics, Xian Jiaotong University, June 17, 1995. *“Efficient spectral-Galerkin method for scientific computation”*.
24. Beijing Institute of Applied Physics and Computational Mathematics, June 27, 1995. *“Stability and accuracy of the nonlinear Galerkin method”*.

LIST of CONFERENCE and SEMINAR TALKS

25. Institute of Mathematics, Academia Sinica, June 28, 1995. “*New developments in the theory of inertial manifold and approximate inertial manifold*”.
26. Center for Turbulence Research, Stanford University and NASA Ames Center, June 25, 1996. “*Incremental Unknowns — A Multilevel Scheme for Turbulence Simulation*”.
27. Program in Scientific Computing and Computational Mathematics, Stanford University, July 3, 1996. “*Fast spectral-Galerkin methods for elliptic equations*”.
28. Institute of Mathematics and Statistics, University of Kent at Canterbury, U.K. Aug. 12, 1996. “*Efficient spectral-Galerkin methods for Scientific Computing*”.
29. Department of Mathematics, Indiana University, Oct. 21, 1996. “*Pseudo-compressibility methods for the incompressible flows*”.
30. Division of Applied Mathematics, Brown University, Dec. 12, 1997. “*Fast spectral-Galerkin method and its applications*”.
31. Department of Mathematics, Beijing University, Dec. 24, 1997. “*Fast spectral-Galerkin method and its applications*”.
32. Institutt for Informatikk, University of Bergen, Norway, Mar. 5, 1998. “*Fast spectral-Galerkin method and its applications*”.
33. Courant Institute, New York University, May 1, 1998. “*Fast spectral-Galerkin method and its applications in fluid dynamics*”.
34. Texas Institute of Computational and Applied Mathematics, University of Texas at Austin, Sept. 17, 1998. “*Fast spectral-Galerkin methods: applications in fluid dynamics*”.
35. Department of Mathematics, Arizona State University, Dec. 29, 1998. “*Fast spectral-Galerkin methods: applications in fluid dynamics*”.
36. Department of Mathematics, Hong Kong Baptist University, Jan. 28, 1999. “*Fast spectral-Galerkin methods: applications in fluid dynamics*”.
37. Department of Mathematics, Hong Kong University of Science and Technology, Feb. 10, 1999. “*Fast spectral-Galerkin methods: applications in fluid dynamics*”.
38. Texas Institute of Computational and Applied Mathematics, University of Texas at Austin, Apr. 6, 1999. “*Pseudo-compressibility methods for incompressible flows*”.
39. Institute of Mathematical Sciences, Chinese University of Hong Kong, May. 13, 1999. “*Pseudo-compressibility methods for incompressible flows*”.
40. Institut de Mathématique, Université de Bordeaux 1, June 24, 1999. “*Pseudo-compressibility methods for incompressible flows*”.

LIST of CONFERENCE and SEMINAR TALKS

41. LIMSI, University de Paris-Sud, June 28, 1999. “*Fast spectral-Galerkin methods: applications in fluid dynamics*”.
42. Department of Mathematics, University of Poitiers, France, March 16, 2000. “*Fast spectral-Galerkin methods: algorithms and applications*”.
43. Department of Mathematics, Georgia Institute of Technology, Apr. 12, 2000. “*Pseudo-compressibility methods for incompressible flows*”.
44. Institut de Mathématique, Université de Bordeaux 1, June 12, 2000. “*Spectral-Galerkin methods: algorithms and applications*”.
45. Department of Mathematics, University of Maryland, Sept. 28, 2000. “*Some new developments on projection methods: pressure-correction and velocity-correction schemes*”.
46. Department of Mathematics, University of Minnesota, Nov. 28, 2000.
47. Department of Mathematics, University of Delaware, Dec. 4, 2000.
48. Department of Mathematics, Oklahoma State University, Jan. 26, 2001.
49. Department of Mathematics, Michigan State University, Jan. 30, 2001.
50. Department of Mathematics, University of Kentucky, Feb. 1, 2001.
51. Department of Mathematics, University of Central Florida, Feb. 13, 2001.
52. Department of Mathematics, Purdue University, Feb. 15, 2001.
53. Department of Mathematics, IUPUI, Feb. 16, 2001.
54. Department of Mathematics, Georgia Tech, Feb. 21, 2001.
55. Department of Mathematics, University of Southern California, Feb. 23, 2001.
56. Département de Mathématique, Université de Picardie Jules Verne, France, June 2001.
57. Department of Mathematics, Xiamen University, July 16, 2001.
58. Department of Mathematics, Purdue University, Nov. 29, 2001.
59. Department of Mathematics and Statistics, Texas Tech University, Feb 7, 2002.
60. Department of Mathematics, Shanghai Normal University, Aug. 2, 2002.
61. Department of Mathematics, Indiana University, Sep. 27, 2002.
62. Department of Mathematical Sciences, University of Illinois at Chicago, Nov. 13, 2002.

LIST of CONFERENCE and SEMINAR TALKS

63. Department of Mathematics, University of Wisconsin, Nov. 15, 2002.
64. Department of Mathematics, Oklahoma State University, Mar. 25, 2003.
65. Division of Applied Mathematics, Brown University, Apr. 25, 2003.
66. Department of Computational Sciences, National University of Singapore, Jul. 3, 2003.
67. Department of Mathematics, Arizona State University, Oct. 9, 2003.
68. Department of Mathematics, McMaster University, Oct. 17, 2003.
69. Department of Mathematics, Penn State University, Oct. 20, 2003.
70. Department of Mathematics and CSIT, Florida State University, Mar. 3, 2004.
71. Department of Mathematics, University of Notre Dame, Oct. 11, 2004.
72. Department of Mathematics, Indiana University, Oct. 29, 2004.
73. Department of Mathematical Sciences, Worcester Polytechnic Institute, Nov. 8, 2004.
74. Department of Mathematics, Wayne State University, March. 21, 2005.
75. Department of Mathematics, University of Manitoba, March. 31, 2005.
76. Department of Mathematics, Michigan State University, Apr. 28, 2005.
77. Institute of Scientific and Engineering Computing, Academia Sinica, June 23, 2005.
78. Institute of Atmosphere Sciences, Academia Sinica, June 27, 2005.
79. Department of Computational Mathematics, Peking University, June 28, 2005.
80. Department of Mathematics, Texas A&M University, Nov. 3, 2005.
81. Department of Mathematics, Chinese University of Hong Kong, Dec. 22, 2005.
82. Institute of Mechanics, Academia Sinica, June 20, 2006.
83. Department of Applied Mathematics, Providence University, Taiwan, July 3, 2006.
84. Department of Applied Mathematics, National ChiaoTung University, Taiwan, July 6, 2006.
85. Department of Mathematics, Beijing Normal University, July 12, 2006.
86. Institute of Applied Physics and Computational Mathematics, Beijing, July 14, 2006.
87. Department of Mathematics, North Carolina State University, Sep. 28, 2006.

LIST of CONFERENCE and SEMINAR TALKS

88. Department of Mathematics, University of North Carolina, Sep. 29, 2006.
89. Institute of Scientific Computing, Indiana University, Nov. 28, 2006.
90. Department of Mathematics, University of California at Santa Barbara, Feb. 23, 2007.
91. Short course on "Selected Topics in Spectral Methods and CFD" at Universitat Politècnica de Catalunya, May 2–May 11, 2007.
92. Department of Applied Physics, Universitat Politècnica de Catalunya, May 10, 2007.
93. Department of Mathematics, Wayne State University, Oct. 10, 2007.
94. Department of Mathematics, Michigan State University, Oct. 12, 2007.
95. Department of Mathematics, Illinois Institute of Technology, Oct. 29, 2007.
96. Department of Mathematical Sciences, Rensselaer Polytechnic Institute, March 18, 2008.
97. CRM Applied Mathematics Seminar, McGill University, Sep. 29, 2008.
98. Department of Physics, McGill University, Oct. 9, 2008.
99. Department of Mathematics, University of South Carolina, Oct. 16, 2008.
100. Department of Mathematics, York University, Oct. 20, 2008.
101. Department of Mathematics, McMaster University, Oct. 21, 2008.
102. Department of Mathematics, University of Alberta, Oct. 24, 2008.
103. Scientific Computing and Applied & Industrial Mathematics, University of British Columbia, Oct. 29, 2008.
104. Department of Mathematics Colloquium, University of British Columbia, Oct. 31, 2008.
105. Department of Computational Mathematics, Peking University, Nov. 11, 2008.
106. Institute of Computational Mathematics, Chinese Academy of Sciences, Nov. 25, 2008.
107. Institute of Physics, Chinese Academy of Sciences, Dec. 1, 2008.
108. School of Mathematical Sciences, Nanjing Normal University, Dec. 3, 2008.
109. Nanyang University of Technology, Singapore, Dec. 10, 2008.
110. City University of Hong Kong, Dec. 11, 2008.

LIST of CONFERENCE and SEMINAR TALKS

111. CRM-ISM Colloquium, Centre de Recherche Mathematique, Université de Montreal, Dec. 19, 2008.
112. Department of Mathematics, UC Irvine, March 30, 2009.
113. Department of Mathematics, UNC at Charlotte, Apr. 10, 2009.
114. Department of Mathematics, East China Normal University, June 30, 2009.
115. Department of Mathematics, Shanghai University, July 1, 2009.
116. School of Mathematics, Xinjiang University, July 4, 2009.
117. Department of Mathematics, Statistics and Computer Science, University of Illinois at Chicago, Sep. 9, 2009.
118. Department of Mathematics, Iowa State University, Apr. 26, 2010.
119. Department of Mathematics, IUPUI, Sep. 3, 2010.
120. Department of Applied Mathematics, University of Colorado at Boulder, Sep. 17, 2010.
121. Department of Scientific Computing, Florida State University, Oct. 6, 2010.
122. Department of Applied Mathematics, State University of New York at Stony Brook, Oct. 27, 2010.
123. Department of Mathematics, University of British Columbia, Nov. 24 and Nov. 25, 2010.
124. Department of Mathematics, University of Nevada at Las Vegas, Apr. 26, 2011.
125. Department of Mathematics, Hong Kong University of Science and Technology, Oct. 3, 2011.
126. Department of Mathematics, Hong Kong Baptist University, Oct. 4, 2011.
127. Department of Mathematics, Georgia Tech., Oct. 31, 2011.
128. Institute of Applied Physics and Computational Mathematics, China, Nov. 9, 2011.
129. Department of Mathematics, Indiana University, Jan. 27, 2012.
130. Air Force Institute of Technology, Dayton, Apr. 26, 2012.
131. Department of Mathematics, University of South Carolina, Apr 30, 2012.
132. Beijing Center for Computational Science, Aug. 17, 2012.

LIST of CONFERENCE and SEMINAR TALKS

133. Department of Mathematics, University of Dundee, UK, Sep 20, 2012.
134. Department of Mathematics, University of Maryland, Feb 26, 2013.
135. School of Mathematical Science, HuaZhong Normal University, China, May 17, 2013.
136. Department of Mathematics, Penn State University, Oct. 16, 2013.
137. School of Mathematical and Computational Science, Sun Yeh-San University, China, Nov 15, 2013.
138. Department of Mathematics, University of Macau, Dec 13, 2013.
139. School of Mathematical Science, Xi'an Jiaotong University, June 13, 2014.
140. Pacific Northwest National Laboratory, Aug 11, 2014.
141. Department of Mathematics, Duke University, Sep 29, 2014.
142. Department of Mathematics, Texas A&M University, Oct 8, 2014.
143. Department of Mathematics, University of Texas at Arlington, Oct 10, 2014.
144. Department of Mathematics, Indiana University, Oct 17, 2014.
145. Department of Mathematics, Auburn University, Oct 31, 2014.
146. Department of Mathematics, Nanyang Technological University, Singapore, Jan 15, 2015.
147. Institute de Mécaniques et Industries, University of Bordeaux, France, Feb. 13, 2015.
148. Department of Mathematics, Southern Methodist University, Feb 16, 2015.
149. Department of Mathematics, University of Poitiers, France, Feb 19, 2015.
150. Department of Mathematics, University of Torino, Italy, Feb. 24, 2015.
151. Department of Mathematics, University of California at Berkeley and Lawrence Berkeley Lab, Mar 11, 2015.
152. Department of Mathematics, Harbin Institute of Technology, July 17, 2015.
153. Department of Mathematics, University of Nevada at Las Vegas, Mar 15, 2016.
154. Department of Mathematics, Hong Kong University of Science and Technology, Mar 24, 2016.
155. Department of Mathematics, Central South University, Apr 1, 2016.
156. Frontier Lecture at Beijing Computational Science Research Center, Apr 11, 2016.

LIST of CONFERENCE and SEMINAR TALKS

157. Department of Mathematics, University of Minnesota, Oct 21, 2016.
158. Ingram lecture series, Department of Mathematics, Missouri University of Science and Technology, Spring 2017.