Tao Tang

Education

1989: Ph.D. in Applied Mathematics, University of Leeds, UK.

1984 B.Sc. in Mathematics, Peking University, China

Research Interests

Scientific Computing, Numerical Analysis, Applied Mathematics

Fellowships

2017: Elected Academician of Chinese Academy of Sciences

2017: Fellow, American Mathematical Society (AMS Fellow)

2012: Fellow, Society on Industrial and Applied Mathematics (SIAM Fellow)

2008-2010: President, Hong Kong Mathematical Society

2007-2008: President, East Asia SIAM Section

Honors

2018: Invited Lecture at ICM (International Congress of Mathematicians)

2016: National Natural Science Award (2nd class), China

2007: Natural Science for Tertiary Institutions (1st class), the Ministry of Education, China

2007–2010 Joint Research Fund for Hong Kong and Macau Young Scholars, National Science Fund for Distinguished Young Scholars

2005–2010: Changjiang Chair Professor, the Ministry of Education, China

2003: Feng Kang Prize for Scientific Computing, Chinese Society for Computational Mathematics, China

1988: Leslie Fox Prize for Numerical Analysis, The Institute of Mathematics and its Applications, UK

Highlight of Community Service

2020–2022: Gauss Prize Committee, International Mathematical Union (IMU 2022)

2020-2023: Scientific Program Committee, International Congress for Industrial and Applied Mathematics (ICIAM 2023)

2019– : Executive Committee Member, Chinese Mathematical Society

2018–2022: Member, Fields Institute Scientific Advisory Panel, Canada

2018– : Vice President, Chinese Society for Computational Mathematics

2018-2020: Panel Member of State Natural Science Award, China

2010-2011: Member, Panel for the section of Numerical Analysis, ICIAM 2011

2010-2011: Member, IMU Project Committee on "Exploring Journal Ranking and Electron Journals"

2009: Member of the Organizing Committee, SIAM Annual Meeting, UC San Diego, USA

2006-2012: Member, SIAM Committee on Section Activities

2006: Member, Panel for the Section 15 (Numerical Analysis and Scientific Computing), ICM 2006.

2004-2015 Council Member, Hong Kong Institute of Science

Academic Position

2019 – Chair Professor of Mathematics, Hong Kong Baptist University
. & Chair Professor, BNU-HKBU United International College (Zhuhai, China)

2015 – 2019: Chair Professor of Mathematics, Southern University of Science and Technology (Shenzhen, China)

2005– 2008: Distinguished Visiting Professor, Chinese Academy of Sciences

2003 – 2017: Chair Professor of Mathematics, Hong Kong Baptist University

1998 – 2003: Associate Professor/Professor, Hong Kong Baptist University

1990 – 1998: Assistant Professor/Associate Professor, Simon Fraser University, Canada

Editorial Activities

2020–: CSIAM Transactions for Applied Mathematics, (Associate Editor)

2018–: Science China Mathematics, (Associate Editor)

2017–: Numerical Mathematics: Theory, Methods and Applications (Editor-in-Chief)

2016-2019 : Numerical Algorithms (Associate Editor)

2016– : Analysis in Theory and Applications (Associate Editor)

2010-2018: Journal of Computational Mathematics (Associate Editor)

2006-2013: Mathematics of Computation (by American Math Society; Associate Editor)

2010-2018: East Asia Journal on Applied Mathematics (Managing Editor)

2006–: Communications in Computational Physics (Managing Editor)

2005–: Frontiers of Mathematics in China (Associate Editor-in-Chief)

2003– : Journal of Computational Physics (Associate Editor)

2000–: Journal of Scientific Computing (Editorial Member)

2002 - 2006: Communications in Mathematical Sciences (Associate Editor)

2002 - 2010: SIAM Journal on Numerical Analysis (Associate Editor)

2002 - 2008: Chinese Journal of Computational Physics (Associate Editor)

2001 - 2013: Computers & Fluids (Regional Editor)

Administrative Position

2019 – President, BNU-HKBU United International College

2019-2024: Director, Provincial Key Lab for Computational Science and New Material Designing, Guangdong Province

2018 – 2019 Provost, Southern University of Science and Technology

2015 – 2017 Vice President, Southern University of Science and Technology

2010 – 2015 Dean of Science, Hong Kong Baptist University

2009 – 2014 Associate Vice President, Hong Kong Baptist University

2005 – 2008 Head of Mathematics, Hong Kong Baptist University

2002 – 2009 Dean of Graduate School, Hong Kong Baptist University

Research Grants

Natural Sciences and Engineering Research Council (NSERC), 1991-94, Canadian $45,000 Numerical Methods for Partial Differential Equations and Integral Equations

Natural Sciences and Engineering Research Council (NSERC), 1994-97, Canadian $51,000 Computational Fluid Dynamics and Computational Oceanography

Natural Sciences and Engineering Research Council (NSERC), 1997-2001, Canadian $84,000 Numerical Methods for Hyperbolic Conservation Laws

Engineering and Physical Sciences Council (UK) Research Fellowship, (1996)

Hong Kong Research Grants Council (RGC), 1999-2002, HK$630,000 Approximate Solutions of Nonlinear Hyperbolic Conservation Laws

Hong Kong RGC, 2000-02, HK$290,000 Adaptive mesh methods for PDEs

Hong Kong RGC, 2001-2004, HK$600,000 Computational Fluid Dynamics with mesh adaptivity

Hong Kong RGC, 2002-2005, HK$465,000 Numerical Solutions for Hamilton-Jacobian Equations

Hong Kong RGC, 2003-2006, HK$300,000 Resolving Spike Dynamics for Reaction-Diffusion Systems

Hong Kong RGC, 2006-2009, HK$557,690 Gradient Stability and Large Time Stepping Methods for Nonlinear Diffusion Equations

Hong Kong RGC, 2007-2010, HK$267,000 Adaptive Grid Methods For Incompressible Multi-Fluid Flows In Three Space Dimensions

Hong Kong RGC, 2008-2011, HK$572,880 Spectral Methods for Functional Differential Equations and Integral Equations

National Science Foundation of China (NSFC), 2008-2010. RMB400,000 Numerical Methods for Initial and Bounary Value Problems and Their Applications

Hong Kong RGC, 2009-2012, HK$1,167,076 Spectral postprocessing for differential eqns: numerics and analysis

Hong Kong RGC, 2010-2013, HK$655,700 Numerical schemes for Euler equations on unstructured grids

Hong Kong RGC, 2011-2014, HK$1,063,753 Numerical methods for hyperbolic problems with uncertainty

Hong Kong RGC, 2013-2016, HK$868,303 Adaptive Time-stepping Methods for Phase Field Simulations

Hong Kong RGC, 2014-2017, HK$900,258 Stability Studies of Numerical Approximations to the Allen-Cahn Eq.

NSFC, 2017-2022, Uncertainty Quantification and Adaptive Computation, RMB 2,000,000

NSFC and Hong Kong RGC joint grant: Mathematical modeling and analysis for deep learning with structure preserving methods 2019-2023, HK$2,000,000

Guangdong Province, 2019-2023, Design and Computation for New Materials, RMB 10,000,000

Publication list

Google Cgolar Citations: 9152, *h*-index: 50

Books

Numerical Solution of Differential Equations, by Z.-L. Li, Z.-H. Qiao, and T. Tang, Cambridge University Press, 2017

Spectral Methods: Algorithms, Analysis and Applications, by Jie Shen, Tao Tang and Lilian Wang, Springer, 2011 (480 pp.)

Spectral and High-Order Methods with Applications by Jie Shen and Tao Tang, Science Press, 2007 (326 pp.)

Books Edited:

Tony Chan, Y. Huang, T. Tang, J.-C. Xu and L.-A. Ying (eds), Recent Progress in Computational and Applied PDEs, Kluwer Academic/Plenum Publishers. 2002.

S. Y. Cheng, C.-W. Shu and T. Tang (eds), Contemporary Mathematics, Proceedings of the Interna- tional Conference on Scientific Computing and Partial Differential Equations, American Mathemat- ical Society Press, 2003.

Y. Lu, W. Sun and T. Tang (eds), Advances in Scientific Computing and Applications, Science Press, Beijing/New York Publishers, 2004.

Tao Tang and Jinchao Xu (eds), Adaptive Computations: Theory and Algorithms, Science Press, Beijing, 2007 (pp. 415)

Z.-C. Shi, Z. Chen, T. Tang and D. Yu (eds.), Recent Advances in Adaptive Computation, American Mathematical Society, 2005.

Papers

1. Tao Tang, Revisit of Semi-Implicit Schemes for Phase-Field Equations, Anal. Theory Appl., 36(3) (2020), 235-242.
2. Hong-lin Liao, Tao Tang and Tao Zhou, On energy stable, maximum-principle preserving, second order BDF scheme with variable steps for the Allen-Cahn equation, SIAM J. Numer. Anal. 58-4 (2020), pp. 2294-2314.
3. Chaoyu Quan, T. Tang and Jang Yang, How to define dissipation-preserving energy for time-fractional phase-field equations. CSIAM Transactions on Applied Mathematics, 1 (2020), pp. 478-490.
4. Changtao Sheng, Jie Shen, Tao Tang, Li-Lian Wang and Huifang Yuan, Fast Fourier-like mapped Chebyshev Spectral-Galerkin methods for PDEs with integral fractional Laplacian in unbounded domains. SIAM J. Numer. Anal. (2020), pp. 2435-2464.
5. Hong-lin Liao, Tao Tang and Tao Zhou, A second-order and nonuniform time-stepping maximum-principle preserving scheme for time-fractional Allen-Cahn equations accepted by J. Comput. Phys. (2020)
6. Tao Tang, Lilian Wang, Huifang Yuan, and Tao Zhou, Rational spectral methods for PDEs involving fractional Laplacian in unbounded domains , SIAM J. Sci. Comput., 42(2) (2020), A585-A611
7. Tao Tang and Zhonghua Qiao, Efficient numerical methods for phase-field equations, Science Sinica Mathematica, 50(6) (2020), 1-20.
8. Zhiwei Fang, Jichun Li, Tao Tang and Tao Zhou, Efficient Stochastic Galerkin Methods for Maxwell's Equations with Random Inputs, J. Sci. Comput., 80(1) (2019), 248-267
9. Tao Tang, Haijun Yu and Tao Zhou, On energy dissipation theory and numerical stability for time-fractional phase field equations, SIAM J. Sci. Comput. , 41(6) (2019), A3757-3778
10. T. Tang and J. Yang, Computing the maximal eigenpairs of large size tridiagonal matrices with $O(1)$ number of iterations, Numer. Math. Theor. Meth. Appl. 11(4) (2018), 877-894.
11. T. Tang, H. Yuan and T. Zhou, Hermite spectral collocation methods for fractional PDEs in unbounded domains, Commun. Comput. Phys., 24 (2018), 1143-1168
12. T. Tang, On effective numerical methods for phase-field models, Proceedings of the International Congress of Mathematicians, (ICM 2018), `https://doi.org/10.1142/9789813272880_0196`, pp. 3669-3690 (2019).
13. B. Gong, W. Liu, T. Tang, W. Zhao, and T. Zhou, An efficient gradient projection method for Stochastic optimal control problems, SIAM J. Numer. Anal. 55(6) (2017), 2982-3005
14. T. Hou, T. Tang and J. Yang, Numerical analysis of fully discretized Crank–Nicolson scheme for fractional-in-space Allen-Cahn equations, J. Sci. Comput., 72 (2017), 1214 – 1231.
15. X. Li, Z. Qiao and T. Tang, Gradient bounds for a thin film epitaxy equation, J. Diff. Eqns. 262 (2017), 1720-1746.
16. T. Tang, W. Zhao and T. Zhou Deferred correction methods for forward backward Stochastic differential equations, Numer. Math. Theor. Meth. Appl. 10(2) (2017), 222-242
17. Z. Yang, T. Tang and J. Zhang Blowup of Volterra Integro-Differential Equations and Applications to Semi-Linear Volterra Diffusion Equations, Numer. Math. Theor. Meth. Appl. 10(4) (2017), 737-759
18. H. Brunner, T. Tang and J. Zhang, Numerical blow-up of semilinear parabolic integro-differential equations on unbounded domain, J. Sci. Comput. 68 (2016), 1281-1298
19. D. Li, Z. Qiao, and T. Tang, Characterizing the stabilization size for semi-implicit Fourier-spectral method to phase field equations, SIAM J. Numer. Anal. 54(3) (2016), 1653-1681
20. X. Li, T. Tang and C. Xu, Numerical solutions for weakly singular volterra integral equations using Chebyshev and Legendre pseudo-spectral Galerkin methods, J. Sci. Comput. 67 (2016), 43 – 64

21. F. Luo, T. Tang and H. Xie, Parameter-Free Time Adaptivity Based on Energy Evolution for the Cahn-Hilliard Equation, Commu. Comput. Phys. 19 (2016), 1542-1563
22. J. Shen, T. Tang, and J. Yang, On The Maximum Principle Preserving Schemes For The Generalized Allen-Cahn Equation, Commu. Math. Sci. 14(6) (2016), 1517-1534
23. T. Tang, and J. Yang, Implicit-Explicit Scheme for the Allen-Cahn Equation Preserves the Maximum Principle, J. Comp. Math. 34 (2016), 471-481
24. Y. Cheng, A. Kurganov, Z. Qu and T. Tang, Fast and stable explicit operator splitting methods for phase-field models, J. Comput. Phys. 303 (2015), 45-65
25. V. D. Didenko, T. Tang and A. M. Vu, Spline Galerkin methods for the Sherman-Lauricella equation on contours with corners, SIAM J. Numer. Anal. 53(6) (2015), 2752-2770
26. X. Feng, T. Tang and J. Yang, Long time numerical simulations for phase-field problems using p-adaptive spectral deferred correction methods, SIAM J. Sci. Comput. 37 (2015), A271-A294. (pdf)
27. Z. Qiao, T. Tang and H. Xie Error analysis of a mixed finite element method for the molecular beam epitaxy model, SIAM J. Numer. Anal. 53 (2015), 184-205
28. T. Tang and T. Zhou Recent developments in high order numerical methods for uncertainty quantification, (in Chinese), Sci. Sin. Math. 45 (2015), 891 ‐ 928.
29. H. Dong, Z-H Quiao, S-Y Sun, and T. Tang, Adaptive moving grid methods for two-phase flow in porous media, J. Comput. Appl. Math. 265 (2014), 139-150.
30. Y. Cheng, A. Kurganov, Z. Qu and T. Tang, Fast and stable explicit operator splitting methods for phase-field models, J. Comput. Phys. 303 (2015), 45-65.
31. V. D. Didenko, T. Tang and A. M. Vu, Spline Galerkin methods for the Sherman-Lauricella equation on contours with corners, SIAM J. Numer. Anal. 53(6) (2015), 2752-2770.
32. X. Feng, T. Tang and J. Yang, Long time numerical simulations for phase-field problems using p-adaptive spectral deferred correction methods, SIAM J. Sci. Comput. 37 (2015), A271-A294.
33. Z. Qiao, T. Tang and H. Xie Error analysis of a mixed finite element method for the molecular beam epitaxy model, SIAM J. Numer. Anal. 53 (2015), 184-205.
34. T. Tang and T. Zhou Recent developments in high order numerical methods for uncertainty quan- tification, (in Chinese), Sci. Sin. Math. 45 (2015), 891-928.
35. H. Dong, Z-H Qiao, S-Y Sun, and T. Tang, Adaptive moving grid methods for two-phase flow in porous media, J. Comput. Appl. Math. 265 (2014), 139-150.
36. T. Tang and T. Zhou, On discrete least square projection in unbounded domain with random eval- uations and its application to parametric uncertainty quantification, SIAM J. Sci. Comput., 36(5) 2014, A2272-A2295.
37. Y. Chen, X. Li, and T. Tang, A note on Jacobi spectral-collocation methods for weakly singular volterra integral equations with smooth solutions, J. Comput. Math. 31 (2013), 47-56.
38. X. Feng, H. Song, T. Tang, and J. Yang, Nonlinear stability of the implicit-explicit methods for the Allen-Cahn equation, Inverse Problems and Imaging, 7 (2013), 679-695.
39. X. Feng, T. Tang, and J. Yang, Stabilized Crank-Nicolson/Adams-Bashforth schemes for phase field models, East Asian Journal on Applied Mathematics 3 (2013), no. 1, 59-80
40. J. Huang, J. Lai, and T. Tang, An adaptive time stepping method with efficient error control for second-order evolution problems, Science China Mathematics 56 (2013), no. 12, 2735-2771.
41. X.-J. Li, T. Tang, and C.-J. Xu, Parallel in time algorithm with spectral-subdomain enhancement for volterra integral equations, SIAM J. Numer. Anal. 51 (2013), no. 3, 1735-1756.
42. T. Tang, H. Xie, and X. Yin, High-order convergence of spectral deferred correction methods on general quadrature nodes, J. Sci. Comput. 56 (2013), no. 1, 1-13.
43. G. Hu, Z. Qiao, and T. Tang, Moving finite element simulations for reaction-diffusion systems, Adv. Appl. Math. Mech. 4 (2012), no. 3, 365-381.
44. X.-J. Li and T. Tang, Convergence analysis of Jacobi spectral collocation methods for Abel-Volterra integral equations of second kind, Front. Math. China 7 (2012), 69-84.
45. Z.-Q. Xie, X.-J. Li, and T. Tang, Convergence analysis of spectral Galerkin methods for Volterra type integral equations, J. Sci. Comput. 53 (2012), no. 2, 414-434.

46. Tao Zhou and Tao Tang, Galerkin methods for stochastic hyperbolic problems using bi-orthogonal polynomials, J. Sci. Comput. 51 (2012), 274-292.
47. T. Zhou and T. Tang, Convergence analysis for spectral approximation to a scalar transport equation with a random wave speed, J. Comput. Math. 30 (2012), 643-656.
48. Guanghui Hu, Ruo Li, and Tao Tang, A robust WENO type finite volume solver for steady Euler equations on unstructured grids, Commun. Comput. Phys. 9 (2011), 627-648.
49. C. Huang, T. Tang, and Z,-M. Zhang, Supergeometric convergence of spectral collocation meth- ods for weakly singular Volterra and Fredholm integral equations with smooth solutions, J. Comput. Math. 29 (2011), 698-719.
50. Zhonghua Qiao, Zhengru Zhang, and Tao Tang, An adaptive time-stepping strategy for the molecular beam epitaxy models, SIAM J. Sci. Comput. 33 (2011), 1395-1414.
51. Fei Teng, Li Yuan, and Tao Tang, A speed-up strategy for finite volume WENO schemes for hyper- bolic conservation laws, J. Sci. Comput. 46 (2011), 359-378.
52. Yubo Zhang and T. Tang, Simulating three-dimensional free surface viscoelastic flows using moving finite difference schemes, Numer. Math. Theor. Meth. Appl 4 (2011), 92-112.
53. Meiling Zhao, Zhonghua Qiao, and Tao Tang, A fast high order method for electromagnetic scattering by large open cavities, J. Comput. Math. 29 (2011), 287-304.
54. Yanping Chen and T. Tang, Convergence analysis of the Jacobi spectral-collocation methods for Volterra integral equations with a weakly singular kernel, Math. Comp. 79 (2010), 147-167.
55. G.-H. Hu, R. Li, and T. Tang, A robust high-order residual distribution type scheme for steady Euler equations on unstructured grids, J. Comput. Phys. 229 (2010), 1681-1697.
56. T. Tang and Tao Zhou, Convergence analysis for stochastic collocation methods to scalar hyperbolic equations with a random wave speed, Commun. Comput. Phys. 8 (2010), 226-248.
57. Yubo Zhang, Heyu Wang, and Tao Tang, Simulating two-phase viscoelastic flows using moving finite element methods, Commun. Comput. Phys. 7 (2010), 333-349.
58. Tao Zhou and Tao Tang, Note on coefficient matrices from Stochastic Galerkin methods for random diffusion equations, J. Comput. Phys. 229 (2010), no. 22, 8225-8230.
59. Ishtiaq Ali, H. Brunner, and T. Tang, Spectral methods for pantograph-type differential and integral equations with multiple delays, Front. Math. China 4 (2009), 49-61.
60. Ishtiaq Ali, H. Brunner and T. Tang, A Spectral Method for Pantograph-Type Delay Differential Equations and its Convergence Analysis. J. Comp. Math., 27 (2009), pp. 254-265
61. T. Tang and X. Xu, Accuracy enhancement using spectral postprocessing for differential equations and integral equations. Commun. Comput. Phys., 5 (2009), pp. 779-792.
62. Tao Tang, Xiang Xu and Jin Cheng, On Spectral Methods for Volterra Type Integral Equations and the Convergence Analysis. J. Comput. Math., 26 (2008), pp. 825-837.
63. Y. Di, R. Li, and T. Tang, A general moving mesh framework in 3D and its application for simulating the mixture of multi-phase flows, Commun. Comput. Phys. 3 (2008), 582-603.
64. Jingtang Ma and T. Tang, Error analysis for a fast numerical method to a boundary integral equation of the first kind, J. Comput. Math. 26 (2008), 56-68.
65. H. Wang, R. Li, and T. Tang, Efficient computation of dentritic growth with r-adaptive finite element methods, J. Comput. Phys. 227 (2008), 5984-6000.
66. Y. Zhao, T. Tang, and J. Wang, Regularity and global structure of solutions to Hamilton-Jacobi equations I. Convex Hamiltonian, to appear in J. Hyperbol. Differ. Eq., 5 (2008), pp. 663-680.
67. Y. Di, R. Li, T. Tang, and P. Zhang, Level set calculations for incompressible two-phase flows on a dynamically adaptive grid, J. Sci. Comput. 31 (2007), no. 1-2, 75-98.
68. Yinnian He, Yunxian Liu, and T. Tang, On large time-stepping methods for the Cahn-Hilliard equation, Appl. Numer. Math. 57 (2007), 616-628.
69. T. Tang, J. Wang, and Y. Zhao, On the piecewise smoothness of entropy solutions to scalar conservation laws for a large class of initial data, J. Hyperbol. Differ. Eq. 4 (2007), no. 3, 369-389.
70. T. Tang and Z. H. Teng, Superconvergence of monotone difference schemes for piecewise smooth solutions of convex conservation laws, Hokkaido Math. J. 36 (2007), 849-874.

71. L. Yuan and T. Tang, Resolving the shock-induced combustion by an adaptive mesh redistribution method, J. Comput. Phys. 224 (2007), 587-600.
72. Yana Di, Ruo Li, T. Tang, and Pingwen Zhang, Moving mesh methods for singular problems on a sphere using perturbed harmonic mappings, SIAM J. Sci. Comput. 28 (2006), 1490-1508.
73. R. Li and T. Tang, Moving mesh discontinuous Galerkin method for hyperbolic conservation laws, J. Sci. Comput. 27 (2006), 347-363.
74. Z. Tan, T. Tang, and Z. Zhang, A simple moving mesh method for one- and two-dimensional phase-field equations, J. Comput. Appl. Math. 190 (2006), 252-269.
75. Zhonghua Qiao, Zhilin Li, and T. Tang, A finite difference scheme for solving the nonlinear Poisson-Boltzmann equation modeling charged spheres, J. Comput. Math. 24 (2006), 252-264.
76. Chuanju Xu and T. Tang, Stability analysis of large time-stepping methods for epitaxial growth models, SIAM J. Numer. Anal. 44 (2006), 1759-1779.
77. Z. R. Zhang and T. Tang, Resolving small-scale structures in Boussinesq convection by adaptive grid methods, J. Comput. Appl. Math. 195 (2006), 274-291.
78. H.-P. Ma, W.-W. Sun and T. Tang, Hermite spectral methods with a time-dependent scaling for parabolic equations in unbounded domains. SIAM Journal on Numerical Analysis, 43 (2005), 58-75.
79. Boris N. Azarenok and T. Tang, Second-order Godunov-type scheme for reactive flow calcula- tions on moving meshes, Journal of Computational Physics, 206 (2005), 48-80.
80. Z. Yin, Li Yuan, and T. Tang, A new parallel strategy for two-dimensional incompressible flow simulations using pseudo-spectral methods, Journal of Computational Physics, 210 (2005), 325-341.
81. Yana Di, Ruo Li, T. Tang, and Pingwen Zhang, Moving mesh finite element methods for the incompressible Navier-Stokes equations. SIAM Journal on Scientific Computing, 26 (2005), 1036- 1056.
82. Z. Tan, Z.-R. Zhang, Y. Huang and T. Tang, Moving mesh methods with locally varying time steps, Journal of Computational Physics, 200 (2004), 347-367.
83. Q. Y. Chen, T. Tang, and Z. H. Teng, A fast numerical method for integral equations of the first kind with logarithmic kernel using mesh grading. Journal of Computational Mathematics, 22, 287-298 (2004).
84. H.-Z. Tang, T. Tang and K. Xu, A gas - kinetic scheme for shallow - water equations with source terms. Z. Angew. Math. Phys., 55, 1-18 (2004).
85. W.-B. Liu, H.-P. Ma, T. Tang and N. Yan, A posteriori error estimates of DG method for optimal control governed by parabolic equations. SIAM Journal on Numerical Analysis, 42, 1032- 1061 (2004).
86. Y. Q. Huang, Zhong-ci Shi, T. Tang and W. M. Xue, Multilevel successive iteration methods for elliptic problems. Mathematics of Computation, 73, 525-539 (2004).
87. H.-Z. Tang and T. Tang, Moving mesh methods for one- and two-dimensional hyperbolic conservation laws. SIAM Journal on Numerical Analysis, 41, 487-515 (2003).
88. H.-Z. Tang, T. Tang and P.-W. Zhang, An adaptive mesh redistribution method for nonlinear Hamilton-Jacobian equation in two- and three-dimensions. Journal of Computational Physics, 188, 543-572 (2003).
89. Boris N. Azarenok, Sergey A. Ivanenko, and T. Tang, Adaptive mesh redistribution method based on Godunov' s scheme, Communication on Mathematical Sciences, 1, 152-179 (2003).
90. T. Tang, Z.-H. Teng and Z.-P. Xin, Fractional rate of convergence for viscous approximation to nonconvex conservation laws. SIAM Journal of Mathematical Analysis, 35, 98-122 (2003).
91. W. Sun, T. Tang, M. J. Ward, and J. Wei, Numerical challenges for resolving spike dynamics for two one-dimensional reaction-diffusion systems. Studies in Applied Mathematics, 111, 41-84 (2003).
92. R. Li, W.-B. Liu, H.-P. Ma and T. Tang, Adaptive Finite element approximation for distributed elliptic optimal control problems. SIAM Journal of Optimization and Control, 41, 1321-1349 (2002).
93. Johnson C.M. Fok, B.-Y. Guo, and T. Tang, Combined Hermite spectral-finite difference method for the Fokker-Planck equations. Mathematics of Computation, 71, 1497-1528 (2002).
94. R. Li, T. Tang and P.-W. Zhang, A moving mesh finite element algorithm for singular problems in two and three space dimensions. Journal of Computational Physics, 177, 365-393 (2002).
95. T. Tang and Z.-R. Zhang, Adaptive mesh redistribution methods for convection-dominated prob- lems, Communications on Pure and Applied Analysis, 1, 341-357 (2002).

96. T. Tang. Z.-H. Teng and J.-H. Wang, Convergence of relaxing schemes for conservation laws with stiff source terms, Methods and Applications of Analysis, 8, 667-680 (2001).
97. R. Li, T. Tang, and P.-W. Zhang, Moving mesh methods in multiple dimensions based on harmonic maps. Journal of Computational Physics, 170, 562-588 (2001).
98. W.-B. Liu and T. Tang, Error analysis for a Galerkin-spectral method with coordinate trans- formation for solving singularly perturbed problems. Applied Numerical Mathematics, 38, 315-345 (2001).
99. W.B. Liu, H. P. Ma and T. Tang, On mixed error estimates for elliptic obstacle problems, Advances in Computational Mathematics, 15, 261-283 (2001).
100. M. Li and T. Tang, A compact fourth-order finite difference scheme for unsteady viscous incompressible flows, Journal of Scientific Computing, 16, 29-46 (2001).
101. T. Tang, W.M. Xue and P.-W. Zhang, Analysis of moving mesh methods based on geometrical variables, Journal of Computational Mathematics, 19, 41-64 (2001).
102. Y. X. Kan, T. Tang and Z.-H. Teng, On the piecewisely smooth solutions to non-homogeneous scalar conservation laws, Journal of Differential Equations, 175, 27-50 (2001).
103. H.-Z. Tang, T. Tang and J.-H. Wang, On numerical entropy inequalities for second order relaxed schemes, Quarterly of Applied Mathematics, 59, 391-399 (2001).
104. T. Tang and Z.-H. Teng, On the regularity of approximate solutions to conservation laws with piecewise smooth solutions. SIAM Journal on Numerical Analysis, 38, 1483-1495 (2000).
105. E. Tadmor and T. Tang, Pointwise error estimates for relaxation approximations to conservation laws, SIAM Journal on Mathematical Analysis, 32, 870-886 (2000).
106. Y. Qiu, D. M. Sloan and T. Tang, Numerical solution of a singularly perturbed two-point bound- ary value problem using equidistribution: analysis of convergence, Journal of Computational and Applied Mathematics, 116, 121-143 (2000).
107. W. Z. Huang and T. Tang, Pseudospectral solutions for steady motion of a viscous fluid inside a circular boundary, Applied Numerical Mathematics, 33, 167-173 (2000).
108. T. Tang and Jinghua Wang, Convergence of MUSCL relaxing schemes for conservation laws with stiff source terms. Journal of Scientific Computing, 15, 173-196 (2000).
109. S. McKee, T. Tang and T. Diogo, An Euler-type method for two-dimensional Volterra integral equations of the first kind, IMA Journal of Numerical Analysis, 20, 423-440 (2000).
110. E. Tadmor and T. Tang, Pointwise error estimates for scalar conservation laws with piecewise smooth solutions, SIAM Journal on Numerical Analysis, 36, 1739-1758 (1999).
111. T. Tang and K. Xu, Gas-kinetic schemes for the compressible Euler equations: positivity-preserving analysis, ZAMP, 50, 258-281 (1999).
112. T. Tang, Convergence analysis for operator splitting methods to conservation laws with stiff source terms, SIAM Journal on Numerical Analysis, 35, 1939-1968 (1998).
113. T. Tang and Z.-H. Teng, Viscosity methods for piecewise smooth solutions to scalar conservation laws, Mathematics of Computation, 66, 495-526 (1997)
114. T. Tang and M. R. Trummer, Boundary layer resolving pseudospectral methods for singular perturbation problems, SIAM Journal on Scientific Computing, 17, 430-438 (1996)
115. A. Karageorghis and T. Tang, A spectral domain decomposition approach for steady Navier- Stokes problems in circular geometries, Computers and Fluids, 25, 541-549 (1996).
116. M. Li and T. Tang, Steady viscous flow in a triangular cavity by efficient numerical techniques, Computers and Mathematics with Applications, 31, 55-65 (1996).
117. B. Jumarhon, W. Lamb, S. McKee, and T. Tang, A Volterra integral type method for solv- ing a class of nonlinear initial-boundary value problems, Numerical Methods for Partial Differential Equations 12, 265-281 (1996).
118. T. Tang and Z.-H. Teng, Error bounds for fractional step methods for conservation laws with source terms, SIAM Journal on Numerical Analysis, 32, 110-127 (1995)
119. M. Li, T. Tang and B. Fornberg, A compact fourth order finite difference scheme for steady incompressible Navier-Stokes equations, International Journal for Numerical Methods in Fluids, 20, 1137-1151 (1995).

120. T. Tang and Z.-H. Teng, The sharpness of Kuznetsov' s $O(\sqrt{x})$ L^1-error estimate for monotone difference schemes, Mathematics of Computation, 64, 581-589 (1995)
121. Q. Sheng and T. Tang, Optimal convergence of an Euler and finite difference method for nonlinear partial integro-differential equations, Math. Comput. Modeling 21, 1-11 (1995).
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Selected Recent Talks

Invited Speaker: International Mathematics Center, Peking University, December 2019.

Invited Speaker: International Congress of Mathematicians (ICM), (July 31 – August 9, 2018, in Rio de Janeiro, Brazil)

Plenary Speaker: Annual Meeting of Chinese Mathematical Society; October, 2017

Plenary Speaker: 16th International Conference on Hyperbolic Problems: Theory, Numerics and Applications (Aachen, Germany, 1-5 August 2016)

IAM-PIMS distinguished colloquium speaker, University of British Columbia, Feb 1, 2016

Invited Speaker: The Tenth International Conference on Scientific Computing and Applications (ICSCA2016), at the Fields Institute, Toronto, Canada, June 6-10, 2016.

Invited Speaker: Uncertainty quantification in kinetic and hyperbolic problems (University of Wisconsin-Madison, USA, 28-31 March 2015)

Invited Speaker: Modern Perspectives in Applied Mathematics: Theory and Numerics of PDEs (Maryland, April 28 - May 2, 2014)

Invited Speaker: 25th Biennial Conference on Numerical Analysis (University of Strathdyde, UK, June 25-28, 2013)

Pleanary speaker: 9th International Conference on Spectral and High-Order Methods (Gammarth, Tunisia, June 25-29, 2012)

Invited speaker: SAMHYP2011 Numerical methods for hyperbolic equations, Recent trends and future directions (ETH Zurich, Switzerland, February 18-19, 2011)

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