

导师个人简介

计算数学教研室，博士生导师，个人姓名：袁光伟

从事专业：偏微分方程数值解

互联网邮箱：yuan_guangwei@iapcm.ac.cn

教育经历

1982 年于湖南师院获学士学位，1988 年于湘潭大学获硕士学位，1992 年于北京大学获博士学位。

工作经历

1982 年 8 月—1986 年 8 月、1988 年 12 月—1989 年 9 月在湖南师大任助教。1992 年—1994 年在北京应用物理与计算数学研究所数学博士后流动站工作，出站后留所工作至今。

研究方向简介

从事非线性偏微分方程数值解和并行计算方法研究。

个人荣誉、所获奖项等

曾获于敏数理科学奖、军队科技进步奖一等奖、部委级科技进步奖一等奖、国家科学技术进步奖二等奖和中国工程物理研究院科技创新奖一等奖，曾获政府特殊津贴，曾入选国家百万人才工程、四川省学术和技术带头人，曾获总装装备预先研究先进个人。

代表性研究成果列表（请按照参考文献引用格式提供详细信息）

1. Shuai Wang, Xudeng Hang, Guangwei Yuan, A pyramid scheme for three-dimensional diffusion equations on polyhedral meshes, *J. Comput. Phys.*, 350 (2017) 590–606.
2. Xiang Lai, Zhiqiang Sheng and Guangwei Yuan, Monotone finite volume scheme for three dimensional diffusion equation on tetrahedral meshes., *Commun. Comput. Phys.* 21(2017), 162-181.
3. Rong Yang, Guangwei Yuan, h-Refinement for simple corner balance scheme of S_N transport equation on distorted meshes, *Journal of Quantitative Spectroscopy & Radiative Transfer*; 184 (2016), 241-253.
4. Z. Sheng, G. Yuan, A new nonlinear finite volume scheme preserving positivity for diffusion equations, *J. Comput. Phys.* (2016), Volume 315, Issue C, 15 June 2016, Pages 182–193.
5. Z. Sheng, G. Yuan, A Cell-Centered Nonlinear Finite Volume Scheme Preserving Fully Positivity for Diffusion Equation, *J. Sci. Comput.*, 2016, Volume 68, Issue 2, pp 521–545.
6. Guangwei Yuan and Yanzhong Yao, Parallelization Methods for Solving Three-temperature Radiation-hydrodynamic Problems, *Discrete and Continuous Dynamical Systems B*, Vol. 21, No. 5, 2016, 1651-1668.
7. Xia Cui, Guangwei Yuan, Zhijun Shen, Asymptotic analysis of discrete schemes for non-equilibrium radiation diffusion, *J. Comput. Phys.*, 313 (2016) 415–429.
8. Xiang Lai, Zhiqiang Sheng and Guangwei Yuan, A Finite Volume Scheme for Three-Dimensional Diffusion Equations, *Communications in Computational Physics*, Volume 18, Issue 03, 2015, pp 650-672.
9. Xingding Chen and Guangwei Yuan, A Constrained Finite Element Method Based on

- Domain Decomposition Satisfying the Discrete Maximum Principle for Diffusion Problems, *Communications in Computational Physics*, Volume 18, Issue 02, 2015, pp 297 – 320.
10. Z. J. Shen, W. Yan, G. W. Yuan, A Stability Analysis of Hybrid Schemes to Cure Shock Instability, *Commun.Comput. Phys.*, 15(5), 2014, 1320-1342.
 11. Z. J. Shen, W. Yan, G. W. Yuan, A robust and contact resolving Riemann solver on unstructured mesh, Part I, Euler method, *J. Comput. Phys.*, 268 (2014), 432-455.
 12. Z. J. Shen, W. Yan, G. W. Yuan, A robust and contact resolving Riemann solver on unstructured mesh, Part II, ALE method, *J. Comput. Phys.*, 268 (2014), 456-484.
 13. Shuai Wang, Guangwei Yuan, Yonghai Li and Zhiqiang Sheng, A monotone finite volume scheme for advection-diffusion equations on distorted meshes, *Int. J. Numer. Meth. Fluids*, 2012,69 (7):1283-1298.
 14. S. Wang, G. Yuan, Y. Li, Z. Sheng, Discrete maximum principle based on repair technique for diamond type scheme of diffusion problems, *Int. J. Numer. Meth. Fluids*, 70 (9): 1188-1205, 2012
 15. Lina Chang, Guangwei Yuan, An efficient and accurate reconstruction algorithm for the formulation of cell-centered diffusion schemes, *J. Comput. Phys.*, 231 (2012) 6935-6952.
 16. Z. Sheng, G. Yuan, An improved monotone finite volume scheme for diffusion equation on polygonal meshes, *J. Comput. Phys.*, 231 (2012) 3739-3754.
 17. Y. Yao, G. Yuan, Enforcing Positivity with Conservation for Nine-Point Scheme of Nonlinear Diffusion Equations, *Comput. Methods Appl. Mech. Engrg.*, 223-224 (2012) 161–172.
 18. Guangwei Yuan, Yanzhong Yao, Li Yin, Conservative Domain Decomposition Procedure for Nonlinear Diffusion Problems on Arbitrary Quadrilateral Grids, *SIAM J. Sci. Comput.* 33(3), 2011, 1352-1368.
 19. Zhiqiang Sheng and Guangwei Yuan, The finite volume scheme preserving extremum principle for diffusion equations on polygonal meshes, *Journal of Computational Physics*, 230, 2011, 2588-2604.
 20. Jingyan Yue, Guangwei Yuan, Picard-Newton Iterative Method with Time Step Control for Multimaterial Non-equilibrium Radiation Diffusion Problem, *Commun. Comput. Phys.*, 10(4), 2011, 844-866.
 21. Jiming Wu, Zihuan Dai, Zhiming Gao, Guangwei Yuan, Linearity preserving nine-point schemes for diffusion equation on distorted quadrilateral meshes, *Journal of Computational Physics*, Volume 229, Issue 9, 1 May 2010, Pages 3382-3401.
 22. Lina Chang, Guangwei Yuan, Cell-centered finite volume methods with flexible stencils for diffusion equations on general nonconforming meshes, *Comput. Methods Appl. Mech. Engrg.*, 198 (2009) 1638–1646.
 23. Qiang Zhao, Guangwei Yuan, Analysis and construction of cell-centered finite volume scheme for diffusion equations on distorted meshes, *Comput. Methods Appl. Mech. Engrg.* 198 (2009) 3039–3050.
 24. Zhiqiang Sheng, Jingyan Yue and Guangwei Yuan, Monotone finite volume schemes of nonequilibrium radiation diffusion equations on distorted meshes, *SIAM J. Sci. Comput.*, Vol. 31, No. 4, pp. 2915–2934, 2009.

25. Zhenying Hong, Guangwei Yuan, A Parallel Algorithm with Interface Prediction and Correction for Spherical Geometric Transport Equation, *Progress in Nuclear Energy*, 51 (2009), pp. 268-273.
26. Zhiqiang Sheng and Guangwei Yuan, A Finite Volume Scheme for Diffusion Equations on Distorted Quadrilateral Meshes, *Transport Theory and Statistical Physics*, 37:2,171 -207, 2008.
27. Zhiqiang Sheng, Guangwei Yuan, A Nine Point Scheme for Approximating Diffusion Operators on Distorted Quadrilateral Meshes, *SIAM Journal on Scientific Computing*, 30 (2008), pp. 1341-1361.
28. Guangwei Yuan and Zhiqiang Sheng, Monotone finite volume schemes for diffusion equations on polygonal meshes, *J. Comput. Phys.*, 227 (2008) 6288-6312.
29. Guangwei Yuan, Zhiqiang Sheng, Analysis of Accuracy of a Finite Volume Scheme for Diffusion Equations on Distorted Meshes, *Journal of Computational Physics*, 224(2), 2007, 1170-1189.
30. Guangwei Yuan, Xudeng Hang, Parallel iterative difference schemes based on prediction techniques for S_n transport method, *Applied Numerical Mathematics*, (2007) Vol. 57, 746-752.
31. Guangwei Yuan, Xudeng Hang, Zhiqiang Sheng, Parallel difference schemes with interface extrapolation terms for quasi-linear parabolic systems, *Science in China Series A: Mathematics*, 50(2), 2007, 253-275.
32. Guangwei Yuan and Xudeng Hang, Acceleration methods of nonlinear iteration for nonlinear parabolic equations, *Journal of Computational Mathematics*, 24 (2006), 412–424.
33. Guangwei Yuan, Longjun Shen, Stability and convergence of the explicit--implicit conservative domain decomposition procedure for parabolic problems, *Computer and Mathematics with Application*, 47 (2004), 793–801.
34. Guangwei Yuan, Fengli Zuo, Parallel Differences Schemes for Heat Conduction Equation, *International Journal of Computer Mathematics*, 80 (2003), 995–999.
35. Weiwei Sun, Guangwei Yuan, Stability Condition of Difference Schemes for Parabolic Systems, *SIAM J. Numer. Anal.*, 38 (2000), pp.548-555.
36. Weiwei Sun, Guangwei Yuan, Y. Ren, Iterative Algorithms for Impressed Cathodic Protection Systems, *International Journal for Numerical Methods in Engineering*, 49 (2000), pp. 751-768.
37. Guangwei Yuan, Longjun Shen, Shaohong Zhu, Unconditional Stability of Parallel Difference Schemes with Variable Time Steplengthes for Heat Equations, *International Journal of Computer Mathematics*, Vol. 75 (2000), pp. 315--322.
38. Guangwei Yuan, Convergence of P_N Approximation for the Neutron Transport Equations with Reflective Boundary Condition, *Journal of Mathematical Physics*, Volume 41 (2000), pp. 867-874.
39. Zhou Y L, Yuan G W, Difference method of general schemes with intrinsic parallelism for one-dimensional quasilinear parabolic systems with bounded measurable coefficients, *J.*

Part. Diff. Eq., 1999, 12: 213–228.

40. Zhou Y L, Yuan G W, General difference schemes with intrinsic parallelism for semilinear parabolic systems of divergence type, *J. Comput Math*, 1999, 17: 337–352.
41. Yuan G W, Shen L J, Zhou Y L, Unconditional stability of alternating difference schemes with intrinsic parallelism for two-dimensional parabolic systems, *Numer Methods Partial Differential Equations*, 1999, 15: 625–636.
42. Zhou Y L, Shen L J, Yuan G W. Convergence of iterative difference method with nonuniform meshes for quasilinear parabolic systems, *J. Part. Diff. Eq.*, 1998, 11: 163–172.
43. Yulin Zhou, Guangwei Yuan, General difference schemes with intrinsic parallelism for nonlinear parabolic systems, *Science in China Series A: Mathematics*, 1997, Volume 40, Issue 4, pp 357–365.
44. Guo Boling and Yuan Guangwei, Cauchy problem for the Ginzburg-Landau equation for the superconductivity model, *Proceedings of the Royal Society of Edinburgh Section A: Mathematics*, Volume 127, Issue 6, 1997, pp. 1181-1192.
45. Guo Boling and Yuan Guangwei, The Cauchy problem for the system of Zakharov equations arising from ion-acoustic modes, *Proceedings of the Royal Society of Edinburgh Section A: Mathematics*, Volume 126, Issue 4, 1996, pp. 811-820.
46. Guo Boling and Yuan Guangwei, On the suitable weak solutions for the Cauchy problem of the Boussinesq equations, *Nonlinear Analysis: Theory, Methods & Applications*, Volume 26, Issue 8, 1996, pp 1367-1385.
47. Guo Boling and Yuan Guangwei, Global smooth solution for the Klein–Gordon–Zakharov equations, *Journal of Mathematical Physics* 36, 4119 (1995).
48. Yuan Guangwei, The existence and uniqueness of the weak solution for the evolutionary electrochemical machining problem, *J. Part. Diff. Eq.*, 8 (1995), pp. 297-309.
49. Guangwei Yuan and Zuhuan Liu, Existence and Uniqueness of the C^α Solution for the Thermistor Problem with Mixed Boundary Value, *SIAM J. Math. Anal.*, 25(4), 1157–1166 (1994).
50. Guangwei Yuan, Existence and uniqueness of the classical solution for the steady-state electrochemical machining problem, *IMA Journal of Applied Mathematics*, Volume 53, Issue 2, 1994, Pages 173–190.
51. Guangwei Yuan, Regularity of solutions of the thermistor problem, *Applicable Analysis*, Vol. 53, Iss. 3-4, 1994.
52. Yuan Guangwei, Existence of a weak solution for the phase change problem with Joule's heating, *J. Part. Diff. Eq.*, 7 (1994), pp. 35-48.
53. Lishang Jiang, Guangwei Yuan, Fahuai Yi, A free boundary problem arising in oil production, *Meccanica*, 1993, Volume 28, Issue 2, pp 111–115.