

## ***Publications of 2008:***

### **Monographs and printed lecture notes:**

1. 王红艳,胡星标: 《带自相容源的孤立子方程》,清华大学出版社,2008年2月.
2. 袁亚湘:《非线性优化计算方法》,科学出版社,2008年.

### **Papers published in research journals:**

1. L.Wang and Z.-Z. Bai(白中治): Convergence conditions for splitting iteration methods for non-Hermitian linear systems, *Linear Algebra and Its Applications*, 428:2-3(2008), 453-468. (SCI)
2. Z.-Z. Bai(白中治), Y.H Gao and L.Z. Lu: Fast iterative schemes for nonsymmetric algebraic Riccati equations arising from transport theory, *SIAM Journal on Scientific Computing*, 30:2(2008), 804-818.(SCI)
3. Z.-Z. Bai(白中治), G H. Golub and M. K. Ng: On inexact Hermitian and skew-Hermitian splitting methods for non-Hermitian positive definite linear systems, *Linear Algebra and Its Applications*, 428:2-3(2008), 413-440. (SCI)
4. Z.-Z Bai(白中治): Several splittings for non-Hermitian linear systems, *Science in China, Series A: Mathematics*, 51:8(2008), 1339-1348.(SCI,EI)
5. Z.-Z. Bai(白中治) and Z.-Q. Wang: On parameterized inexact Uzawa methods for generalized saddle point problems, *Linear Algebra and Its Applications*, 428:11-12(2008), 2900-2932. (SCI)
6. J.-F. Yin and Z.-Z. Bai(白中治): The restrictively preconditioned conjugate gradient methods on normal residual for block two-by-two linear systems, *Journal of Computational Mathematics*, 26:2(2008), 240-249. (SCI,EI)
7. Y. Yu and J. Z. Cui(崔俊芝): F. Han. An effective computer generation method for the composites with random distribution of large numbers of heterogeneous grains. « *Composites Science Technology* » 68: 2543-2550, 2008. (SCI)
8. Y. Yu and J. Z. Cui(崔俊芝): F. Han, Y. Chen. The two-order and two-scale method for heat conduction properties of composite materials with random distribution of grains. *Computer and Experimental Simulations in Engineering and Science* 2(2008), 19-34
9. F. Han and J. Z. Cui(崔俊芝): Y. Yu. The statistical two-order and two-scale method for predicting the mechanics parameters of core-shell particle-filled polymer composites. *Interaction and Multi-scale Mechanics: An International Journal* 1(2008) 231-251
10. W. Allegretto and L.Q. Cao(曹礼群), and Y.P.Lin: Multiscale asymptotic expansion for second order parabolic type equation with rapidly oscillating coefficients, *Discrete and Continuous Dynamical Systems, Ser A.*, 20(3)(2008), 543-576. (??, SCI)
11. L.Q. Cao(曹礼群) and J.L. Luo: Multiscale numerical algorithm for the elliptic eigenvalue problem with the mixed boundary in perforated domains, *Applied Numer. Math.*, 58(2008), 1349-1374. (??, SCI)
12. L.Q. Cao(曹礼群): Multiscale asymptotic method of optimal control on the boundary for heat equations of composite materials, *Journal of Mathematical Analysis and Applications*, 343(2008), 1103-1118. (??, SCI)
13. X.Wang and L.Q.Cao(曹礼群): The hole-filling method and the uniform multiscale computation of the elastic

equations in perforated domains, *International Journal of Numerical Analysis and Modeling*, 5(4) (2008), 612-634. (??, SCIE)

14. 罗剑兰?曹礼群:复合介质与界面传热的多物理模型与计算, *工程热物理学报*, 29(10) (2008): 1711-1714. (国内, EI)

15. 董巧丽?曹礼群?翟方曼:三维复合介质波动方程多尺度辛几何算法, *计算数学*, 30(4) (2008), 437-448. (国内)

16.Z. Chen (陈志明) and J.C. N'ed'elec: On Maxwell equations with the transparent boundary condition, *J. Comput. Math.* 26 (2008), 284-296. (SCI)

17.J. Chen and Z. Chen (陈志明): An adaptive perfectly matched layer technique for 3-D time-harmonic electromagnetic scattering problems, *Math. Comp.* 77 (2008), 673-698. (SCI)

18.Z. Chen (陈志明): An adaptive uniaxial perfectly matched layer technique for time-harmonic scattering problems, *Numerical Mathematics: Theory, Methods and Applications*, 1 (2008), 113-137.

19.X. Dai (戴小英) and A. Zhou (周爱辉): Three-scale finite element discretizations for quantum eigenvalue problems, *SIAM Journal on Numerical Analysis*, 46(2008), 295-324. (SCI)

20.X. Dai(戴小英), J. Xu, and A. Zhou(周爱辉): Convergence and optimal complexity of adaptive finite element eigenvalue computations, *Numer. Math.* 110(2008), 313-355. (SCI)

21.X. Dai (戴小英), Z. Yang, and A. Zhou (周爱辉): Symmetric finite volume schemes for eigenvalue problems in arbitrary dimensions, *Science in China Series A: Mathematics* 51:B (2008), 1401-1414. (SCI)

22.X. Dai (戴小英), L. Shen, and A. Zhou (周爱辉): A local computational scheme for higher order finite element eigenvalue approximations. *International Journal of Numerical Analysis & Modeling*, 5:4(2008), 570-589. (SCI)

23.Z. Xu and Y.-H. Dai (戴戡虹): A stochastic approximation frame algorithm with adaptive directions, *Numerical Mathematics: Theory, Methods and Applications* 1(2008), 460-474

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25.L. Wang and Y.-H. Dai (戴戡虹): Left conjugate gradient methods for non-Hermitian linear systems, *Numerical Linear Algebra with Applications*, DOI: 10.1002/nla.600 (2008). (SCI,EI)

26.Y. Di (邸亚娜) and X.-P. Wang: Precursor simulations in spreading using a multi-mesh adaptive finite element method, accepted by *J. Comput. Phys.* (2008), (SCI)

27.Y. Di (邸亚娜) and R. Li: Computation of dendritic growth with level set model using a multi-mesh adaptive finite element method, accepted by *J. Sci. Comput.* (2008). (SCI)

28.J. Hong (洪佳林) and Y. Sun(孙雅娟): Generating functions of multi-symplectic RK methods via DW Hamilton-Jacobi equation, *Numer. Math.* 110 (2008) 491-519. (SCI)

29.L. Kong, J. Hong(洪佳林), and R. Liu: Long-term numerical simulation of the interaction between a neutron field and a neural meson field by a symplectic-preserving scheme, *J. of Phys. A: Math. & Theo*, 41 (2008) 255207. (SCI)

30.Y. Liu, Q. Hu (胡齐芽), and D. Yu(余德浩): A non-overlapping domain decomposition for low-frequency time-harmonic Maxwell's equations in unbounded domains, *Adv. Comput. Math*, 28(2008) 355-382

31.Q. Hu(胡齐芽), S. Shu, and J. Zou: A mortar edge element method with nearly optimal convergence for three-dimensional Maxwell's equations, *Math. Comput.*, 2008, Vol. 77, 1333-1353 (SCI)

- 32.Q. Hu(胡齐芽): Generalized normal derivatives and their applications in DDMs with nonmatching grids and DG methods, *Numer. Math. Theor. Meth. App.*, 1(2008), 383-409
- 33.H.Y. Wang, X.B. Hu (胡星标) and H.W. Tam: *J. Math. Anal. Appl.*, 338(2008),82-90. ( SCI )
- 34.K. Fan, W. Cai and X. Ji (季霞) : A full vectorial generalized discontinuous Galerkin beam propagation method (GDG-BPM) for inhomogeneous optical waveguide , *Journal of Computational Physics*, 227 (2008), 7178-7191. ( SCI )
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- 36.W. Cai, X. Ji (季霞) ,J.G. Sun, and S.H. Shao: A Schwarz generalized rigid-oscillation spectral element method (GeSEM) for 2-D high frequency electromagnetic scattering in dispersive inhomogeneous media , *Journal of Computational Physics*, 227 (2008), 9933–9954. (SCI)
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- 38.Q. Lin(林群) , H.-T. Huang, and Z.-C.Li, New expansions of numerical eigenvalues for  $-u'' = \lambda u$  by nonconforming elements, *Math. Comp.*, 77 (2008), 2061-2084 ( SCI).
- 39.周俊明,林群:高次内有限元外推的进一步研究, *数学的实践与认识*, 38 (2008), 192-198.
- 40 . Y. Xiang, H. Wei, P.B. Ming (明平兵) , and W. E: A generalized Peierls-Nabarro model for curved dislocations and core structures of dislocation loops in Al and Cu, *Acta Materialia*, 56(2008), 1447--1460. ( SCI )
- 41.H. Wei, Y. Xiang, and P.B. Ming (明平兵) : A generalized Peierls-Nabarro model for curved dislocations using discrete Fourier transform, *Commun. Comput. Phy.*, 4(2008), 275--293. (SCI )
- 42.Q. Du and P.B. Ming (明平兵) : Cascadic multigrid methods for parabolic problems, *Science in China Series A: Math.* 51(2008), 1415--1439. ( SCI )
- 43.J. Huang, L. Guo, and Z.-C. Shi(石钟慈) : Vibration analysis of Kirchhoff plates by the Morley element method. *J.Comput.Appl.Math.* 213(2008),no.1,14—34. ( SCI )
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- 45.Y. Sun (孙雅娟) : A class of volume-preserving numerical algorithms, *Appl. Math. Comput.* 206 (2008) , 841--852. ( SCI )
- 46.J.L. Fu, B.Y. Chen, Y.F. Tang(唐贻发) , and H. Fu: Symplectic-Energy-First Integrators of Discrete Mechano-Electrical Dynamical Systems, *Chinese Physics*, 17(11), (2008), 3942-3952.
- 47.J.L. Fu, S. Jiménez, Y.F. Tang(唐贻发) , and L. Vázquez: Construction of Exact Invariants of Time-Dependent Linear Nonholonomic Dynamical Systems, *Physics Letters A*, 372(10), (2008),1555-1561.
- 48.X. Wen (文新) and S. Jin: The  $L^1$ -error estimates for a Hamiltonian-preserving scheme for the Liouville equation with piecewise constant potentials, *SIAM J. Numer. Anal.* 46(5), (2008), 2688-2714. ( SCI )
- 49.X. Wen (文新) and S. Jin: Convergence of an immersed interface upwind scheme for linear advection equations with piecewise constant coefficients I:  $L^1$ -error estimates, *J. Comput. Math.* 26(1), (2008), 1-22. (SCI , EI )
- 50.C. Zheng, X. Wen (文新) and H. Han: Numerical solution to a linearized KdV equation on unbounded domain, *Numer. Methods Partial Differential Equations* 24(2), (2008),383-399. ( SCI )

- 51.X. Wen (文新) : High order numerical quadratures to one dimensional delta function integrals, SIAM J. Sci. Comput. 30(4), (2008),1825-1846. ( SCI )
- 52.D. Liu, G. Xu ( 徐国良 ) and Q. Zhang: A discrete scheme of Laplace-Beltrami operator and its convergence over quadrilateral meshes. Computers and Mathematics with Applications 55:6(2008), 1081-1093. ( SCI )
- 53.G. Xu ( 徐国良 ) and Q. Zhang: A general framework for surface modeling using geometric partial differential equations, Computer Aided Geometric Design, 25:3(2008), 181-202.( SCI )
- 54.R. P. Bojorstar and X. Xu( 许学军 ): The Crouzeix--Raviart FE on nonmatching grids with an approximate mortar condition, SIAM J. Numer. Anal., 46(2008),496-516.( SCI )
- 55.L. Qin, Z.-C. Shi( 石钟慈 ), and X. Xu( 许学军 ): On the convergence rate of a parallel nonoverlapping domain decomposition method, Sciences in China, Series A: Mathematics, (51)2008, 1461-1478. (SCI )
- 56.L. Qin and X. Xu( 许学军 ): Optimized Schwarz methods with Robin transmission conditions for parabolic problems, SIAM J. Sci. Comput. , (31)2008, 608-623.(SCI )
- 57.Z.-C. Shi( 石钟慈), Xuejun Xu( 许学军 ) and Z. Zhang: The patch recovery for finite element approximation of elasticity problems under quadrilateral meshes, Discrete Contin. Dyn. Syst. Ser. B, 9(2008),163—182. (SCI )
- 58.X. Yin and H. Xie( 谢和虎), S. Jia, and S. Gao, Asymptotic expansions and extrapolations of eigenvalues for the stokes problem by mixed finite element methods, Journal of Computational and Applied Mathematics, 215(1)(2008), 127-141 (SCI , EI ) .
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- 60.S. Jia, H. Xie( 谢和虎 ), X. Yin and S. Gao: Approximation and eigenvalue extrapolation of biharmonic eigenvalue problem by nonconforming finite element methods, Numerical Methods for PDEs, 24(2) ,435 – 448,2008. ( SCI )
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- 63.Y. Liu, Q. Hu, and D. Yu ( 余德浩): A nonoverlapping domain decomposition for low frequency time harmonic Maxwell's equations in unbounded domains, Adv. Comput. Math., 28 (2008),355-382.(SCI)
- 64.A. Shah, and L. Yuan (袁礼): Flux-difference splitting-based upwind compact schemes for the incompressible Navier-Stokes equations, Int. J. Numer. Meth. Fluids, 2009, in press( SCI)
- 65.A. Shah, H. Guo , and L. Yuan (袁礼) : A third-order upwind compact scheme on curvilinear meshes for the incompressible Navier-Stokes equations, Commun. Comput. Phys. Vol. 5, No. 2-4(2009), pp. 712-729 (SCI )
- 66.X. Liu and Y.X. Yuan (袁亚湘) : On the separable nonlinear least squares problems, J. Comput. Math. 26(2008) 290-403 (SCI)
- 67.Y. Lu and Y.X. Yuan (袁亚湘) : An interior-point trust region polynomial algorithm for convex quadratic minimization subject to convex constraints, Optimization methods and Software, 23(2008) 251—258(SCI)
- 68.D. Wu, Z.J. Wu and Y.X. Yuan (袁亚湘) : Rigid vesus unique determination of protein structures with geometric buildup, Optimization Letters, 2(2008) 319-331. (SCI)
- 69.Q.K. Liu, Z.Y. Mo and L.B. Zhang( 张林波 ): A parallel adaptive finite element package based on ALBERTA,

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### **Papers published in proceedings of symposia and conferences:**

1.J.Z.Cui ( 崔俊芝 ) : Fang Su. The Two-Order and Two-Scale Method for Mechanics Behavior for the Damaged Structures of Composite Materials.WCCM-8, Jun. 31 - Jul. 4, 2008, Venice , Italy . Keynote speaker.

2.F. Han and J. Z. Cui ( 崔俊芝 ) : Y. Yu. The Statistically Second-Order Two-Scale Method for Predicting the Mechanical Performance of Composites with Inconsistent Random Distribution. ICMRDCC, Oct. 13-16, 2008, Nanjing China . Invited presentation.

3.Junzhi Cui( 崔俊芝 ) : Fei Han, Yan Yu. The Statistical Two-order and Two-scale Method for Mechanics Parameters of Random Composite Materials. ICHMM-08. Jun. 3-6, 2008, Huangshan , China . Invited presentation.

4.Y. Yu and J. Z. Cui ( 崔俊芝 ) : F. Han. Statistical Two-order and Two-scale Method for Physics Field Problems of Composites with Non-stationary Stochastic Distribution. Cross-Strait Conference on Computational Mechanics, Aug. 24-27, 2008, Taipei China . Invited speaker.

5.F. Han and J. Z. Cui ( 崔俊芝 ) : Y. Yu. The Statistical Second-Order Two-Scale Method for Predicting Thermo-elastic Properties of Composite Structure with Inconsistently Random Distribution. IWCMM18, Oct.8-10, 2008, Beijing , China . Invited speaker

6 .Qin Zhang, Xu Guoliang( 徐国良 ), and Jie Sun: Noise Removal Based on the Variation of Digitized Energy , GMP 2008, LNCS 4975, 290-303.

7.Xu Guoliang( 徐国良 ) : Finite Element Methods for Geometric Modeling and Processing Using General Fourth Order Geometric Flows, GMP 2008, LNCS 4975, 164-177.

8.C. Bajaj, Y. Zhang and Xu Guoliang(徐国良): Physically-based Surface Texture Synthesis Using a Coupled Finite Element System . GMP 2008, LNCS 4975, 344-357.

9. Xu Guoliang(徐国良) and Li ming: Construction of Geometric PDE Bezier Surface with  $G^1$  Continuity, Proceedings of National 15th CAD/CG Conference (2008, Dalian, China), 210-213.

10.Xu Guoliang(徐国良) and Zhen Yanmei:  $G^2$  Surface Modeling using Quasi-Minimal Mean-Curvature-Variation Flow, Proceedings of National 15th CAD/CG Conference(2008, Dalian, China), 214-218.

11. Pan Qing and Xu Guoliang(徐国良): Metamorphosis Based on the Level-Set Methods (with Qing Pan), Proceedings of National 15th CAD/CG Conference (2008, Dalian, China), 339-343.

12. S. Jia, Hehu Xie (谢和虎) and X. Yin: Some Progress On Superconvergence for Mixed FEMs, Recent Advances in Computational Sciences, International Workshop on Computational Sciences and its Education, 175-200,2008.

13. Zhiqiang Xu (许志强): An explicit formulation for two dimensional vector partition functions, Contemporary Mathematics, Vol.452, Amer. Math. Soc., Providence, RI, 2008.

14. Zhiqiang Xu (许志强): M. BECK, B. NILL, B. REZNICK, C. SAVAGE I. SOPRUNOV, Let me tell you my favorite lattice-point problem, with , Contemporary Mathematics, Vol.452, Amer. Math. Soc., Providence, RI, 2008.

15. 张文生,童力:波磁场模拟的隐式格式迹并行计算. 《第5届全国青年计算物理学术交流会论文摘要》, PP. 104 - 105, 2008.

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17.S. Jia, H. Xie (谢和虎) and X. Yin: Some progress on superconvergence for mixed FEMs, Recent Advances in Computational Sciences, International Workshop on Computational Sciences and its Education, 175-200, 2008.