

## CURRICULUM VITAE

Zhiming Chen  
Professor and Director  
Institute of Computational Mathematics  
Academy of Mathematics and System Sciences  
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### Research Interests

- Numerical analysis and scientific computing (Finite element methods; adaptivity and a posteriori error analysis; nonlinear PDEs; numerical homogenization)
- Applications: phase transitions (shape memory alloys, superconductivity); free boundary problems; electromagnetic waves; multiscale phenomena.

### Education

Bachelor's Degree of Sciences, Nanjing University, Nanjing (China), July 1986  
Master's Degree of Sciences, Institute of Mathematics, Academia Sinica, Beijing (China), July 1989  
PhD in Mathematics, University of Augsburg, Augsburg (Germany), February 1992

### Professional experience

Institute of Computational Mathematics, CAS, Beijing (China), Full Professor, March 2000-present  
Institute of Mathematics, Academia Sinica, Beijing (China), Full Professor, October 1997-February 2000  
Institute of Mathematics, Academia Sinica, Beijing (China), Associate Professor, June 1995-September 1997  
Institute of Mathematics, Academia Sinica, Beijing (China), Assistant Professor, June 1994-May 1995  
Munich University of Technology, Munich (Germany), Scientific Research Fellow, March 1992-May 1994

### Prizes and honors

- K.C.Wong Science Research Prize, Chinese Academy of Sciences (1994)
- Hundred Talent Project, Chinese Academy of Sciences (1999)
- China NSF Outstanding Young Scientist Grant (2000)
- Feng Kang Prize on Scientific Computing (2001)
- Invited Speaker, International Congress of Mathematicians, Madrid, Spain (2006)
- The Second National Natural Science Prize (2009)

### Selected Publications

1. *On a non-stationary Ginzburg-Landau superconductivity model*, with K.-H. Hoffmann and J. Liang, *Math. Methods in Appl. Sci.* 16 (1993), 855-875.

2. *On a one-dimensional nonlinear thermoviscoelastic model for structural phase transitions in shape memory alloys*, with K.-H. Hoffmann, J. Diff. Equations 112 (1994), 325-350.
3. *Mixed finite element methods for a dynamical Ginzburg-Landau model in superconductivity*, Numer. Math. 76 (1997), 323-353.
4. *Finite element methods and their convergence for elliptic and parabolic interface problems*, with J. Zou, Numer. Math. 79 (1998), 175-202.
5. *An augmented Lagrangian method for identifying discontinuous parameters in elliptic systems*, with J. Zou, SIAM J. Control and Optimization 37 (1999), 892-910.
6. *Residual type a posteriori error estimates for elliptic obstacle problems*, with R.H. Nochetto, Numer. Math. 84 (2000), 524-548.
7. *An adaptive finite element method with error control for the continuous casting problem*, with R.H. Nochetto and A. Schmidt, Computer Meth. Appl. Mech. Engrg. 189 (2000), 249-276.
8. *Finite element methods with matching and non-matching meshes for Maxwell equations with discontinuous coefficients*, with Q. Du and J. Zou, SIAM J. Numer. Anal. 37 (2000), 1524-1570.
9. *Adaptive Galerkin methods with error control for a dynamical Ginzburg-Landau model in superconductivity*, with S. Dai, SIAM J. Numer. Anal. 38 (2001), 1861-1985.
10. *A mixed multiscale finite element method for elliptic problems with oscillating coefficients*, with T. Hou, Math. Comp. 72 (2002), 541-576.
11. *Numerical homogenization of well singularities in the flow transport through heterogeneous porous media*, with X.Y. Yue, Multiscale Modeling and Simulation, 1 (2003), 260-303.
12. *An adaptive finite element method with perfectly matched absorbing layers for the wave scattering by periodic structures*, with H.J. Wu, SIAM J. Numer. Anal. 41 (2003), 799-826.
13. *An adaptive finite element method with reliable and efficient error control for linear parabolic problems*, with F. Jia, Math. Comp. 73 (2004), 1163-1197.
14. *An Adaptive Perfectly Matched Layer Technique for Time-harmonic Scattering Problems*, with X.Z. Liu, SIAM J. Numer. Anal. 43 (2005), 645-671.
15. *Sharp  $L^1$  a posteriori error analysis for nonlinear convection-diffusion problems*, with G.H. Ji, Math. Comp. 75 (2006), 43-71.
16. *An adaptive finite element method for the  $H$ - $\psi$  formulation of time-dependent eddy current problems*, with W. Zheng and L. Wang, Numer. Math. 103 (2006), 667-689.
17. *An adaptive multilevel method for time-harmonic Maxwell equations with singularities*, with L. Wang and W. Zheng, SIAM J. Sci. Comput. 29 (2007), 118-138.
18. *Convergence of the time-domain perfectly matched layer method for acoustic problems*, International Journal of Numerical Analysis and Modeling, 6 (2009), 124-146.
19. *An adaptive finite element method for the eddy current model with circuit/field couplings*, with J. Chen, T. Cui and L. Zhang, SIAM J. Sci. Comput. 32 (2010), 1020-1042.

20. *Convergence of the uniaxial perfectly matched layer method for time-harmonic scattering problems in two-layered media*, with W. Zheng, SIAM J. Numer. Anal. 48 (2010), 2158-2185.
21. *Long-time Stability and Convergence of the Uniaxial Perfectly Matched Layer Method for Time-domain Acoustic Scattering Problems*, with X. Wu, SIAM J. Numer. Anal. 50 (2012), 2632-2655.
22. *An adaptive anisotropic perfectly matched layer method for 3-D time harmonic electromagnetic scattering problems*, with T. Cui and L. Zhang, Numer. Math. 125 (2013), 639-677.
23. *Reverse Time Migration for Extended Obstacles: Acoustic Waves*, with J. Chen and G. Huang, Inverse Problems 29 (2013) 085005 (17pp).
24. *Reverse Time Migration for Extended Obstacles: Electromagnetic Waves*, with J. Chen and G. Huang, Inverse Problems 29 (2013) 085006 (17pp) .
25. *A Source Transfer Domain Decomposition Method For Helmholtz Equations in Unbounded Domain*, with X. Xiang, SIAM J. Numer. Anal. 51 (2013), 2331-2356.
26. *Target Detection and Characterization from Electromagnetic Induction Data*, with H. Ammari, J. Chen, J. Garnier, and Volkov, J. Math. Pures Appl. 101 (2014), 54-75.
27. *Reverse Time Migration for Reconstructing Extended Obstacles in the Half Space*, with G. Huang, Inverse Problems 31 (2015) 055007 (19pp) .
28. *Reverse Time Migration for Reconstructing Extended Obstacles in Planar Acoustic Waveguides*, with G. Huang, Science in China: Series A Mathematics 58 (2015), 1811-1834.
29. *Convergence of the PML Method for Elastic Wave Scattering Problems*, with X. Xiang and X. Zhang, Math. Comp., to appear.

## Editorships

- Acta Mathematicae Applicatae Sinica (in Chinese), Associate editor, January 2002-present
- Chinese Journal on Engineering Mathematics (in Chinese), Associate editor, August 2007-present
- Communications in Mathematical Sciences, Associate editor, January 2005-December 2006
- Discrete and Continuous Dynamical Systems – B, Associate editor, November 2003-December 2007
- European Journal of Applied Mathematics, Associate editor, January 2005-present
- International Journal of Numerical Analysis and Modeling, Associate Editor, January 2004-present
- Journal of Computational Mathematics, Associate editor, May 2000-present
- Journal of Information and Computational Science, Associate editor, September 2004-present
- Journal of Mathematical Research with Applications, Associate editor, January 2012-present
- Mathematics of Computation, Associate editor, February 2007-present
- Numerical Mathematics: J of Chinese Universities (in Chinese), Editor-in-Chief, January 2004-present
- Numerical Mathematics: Theory, Methods and Applications, Editor-in-Chief, January 2008-present
- SIAM Journal on Numerical Analysis, Associate editor, January 2005-present
- Sciences on China (Series A), Associate editor, January 2003-present
- Vietnam Journal of Mathematics, Associate editor, January 2013-December 2015

## Grants

- China NSF, Principal Investigator, Subject: Phenomenological Superconductivity Models and Adaptive Computations, January 1995-December 1997 (Grant No. 19401032)
- China National Key Project "Large Scale Scientific and Engineering Computing", Principal Investigator, Subject: Numerical Solutions of Free Boundary Problems, January 1997-December 2000
- China NSF, Principal Investigator, Subject: Numerical Methods for Nonlinear PDEs, January 1998-December 2000 (Grant No. 19771080)
- China National Basic Research Project (973 Project) "Large Scale Scientific Computing Research", Sub-project Leader, Subject: Basic Research in Computational Method, October 1999-September 2004 Grant No. G1999032800)
- Chinese Academy of Sciences "Hundred Talent Project", Principal Investigator, Subject: High-end Technology and Scientific Computing, June 2000-May 2003
- China NSF Outstanding Young Scientist Grant, Principal Investigator, Subject: Scientific Computing Research on some Problems from High Technology, January 2001-December 2004 (Grant No. 10025102)
- China NSF Outstanding Oversea Young Scientist Grant, Co-Principal Investigator with Bao Gang, Subject: Computational Mathematics and Scientific Engineering Computing, January 2005-December 2007 (Grant No. 10428105)
- China National Basic Research Project (973 Project) "High Performance Scientific Computing Research", Chief Scientist, December 2005-November 2010 (Grant No. 2005CB321700)
- China NSF Innovation Group Grant, Principal Investigator, Subject: The Methods and Applications of Scientific and Engineering Computing, January 2011-December 2013 (Grant No. 11021101)
- China National Basic Research Project (973 Project) "The Novel Computational Model for Petascale Scientific Computation", Chief Scientist, January 2011- August 2015 (Grant No. 2011CB309700)
- China NSF Innovation Group Grant, Principal Investigator, Subject: The Methods and Applications of Scientific and Engineering Computing, January 2014-December 2016 (Grant No. 11321061)

### Membership

- Member of the Society for Industrial and Applied Mathematics (USA), January 1995-present
- Vice president of China Society of Computational Mathematics, November 2006-October 2018
- Vice president of China Society of Mathematics, February 2008-January 2012
- Vice president of China Society for Industrial and Applied Mathematics, September 2008-August 2016

### Academic administrative services

- Director of the *Institute of Computational Mathematics and Scientific/Engineering Computing, Academy of Mathematics and Systems Science, Chinese Academy of Sciences*, May 2007 - present
- Director of the *State Key Laboratory on Scientific and Engineering Computing (Chinese Academy of Sciences)*, March 2006 - present
- Vice Director of the *State Key Laboratory on Scientific and Engineering Computing (Chinese Academy of Sciences)*, January 2001 - March 2006
- Vice Director of the *Institute of Computational Mathematics and Scientific/Engineering Computing, Academy of Mathematics and Systems Science, Chinese Academy of Sciences*, March 2003 - April 2007