

# Curriculum Vitae

Dr. Boying Wu

Chair, Professor and Ph.D. supervisor at Mathematics Department,  
Harbin Institute of Technology

## Current Research Interests:

- Scientific Computing and Numerical Analysis
- Imaging Processing Theory and its Applications
- Numerical Solution of Partial Differential Equations

## Research Grants:

- Co-Principal Investigator, Natural Science Foundation of China, Important Program, 1 Item
- Principal Investigator, Natural Science Foundation of China, General Program, 1 Item
- Principal Investigator, Natural Science Foundation of China, 2 Items
- Principal Investigator, Natural Science Foundation of Heilongjiang Province, General Program, 3 Items
- Principal Investigator, Pre-Research Foundation of Aerospace Research, 1 Item
- Principal Investigator, Natural Science Foundation of China, 3 Items

## Education and Employment:

1979.09 — 1983.07	Bachelor of Science in Mathematics, HIT
1987.09 — 1990.03	Master of Science in Computational Mathematics, HIT
1996.03 — 2001.12	Ph.D. in Pure Mathematics, HIT
1983.07 — 1988.07	Teaching Assistant, Department of Mathematics, HIT
1988.08 — 1992.11	Lecture, Department of Mathematics, HIT
1992.12 — 2002.07	Associate Professor, Department of Mathematics, HIT
2006.05 — 2014.05	Associate Chair, Department of Mathematics, HIT
2002.08 —	Professor, Department of Mathematics, HIT
2005.05 —	Teaching Leader, Department of Mathematics, HIT

2007.04 — Ph.D. Supervisor, Department of Mathematics, HIT  
2014.05— Chair, Department of Mathematics, HIT

### **Professional Organizations:**

- ◇ Executive Member of Science Education Professional Committee in China Association of Higher Education
- ◇ Member of Professional Committee in Chinese Association for System Simulation Algorithm
- ◇ President of Computational Mathematics Society of Heilongjiang Province
- ◇ Vice President of Mathematics Society of Heilongjiang Province
- ◇ Executive Member of Heilongjiang Society for Industrial and Applied Mathematics
- ◇ Secretary General of Heilongjiang Organizing Committee in Contemporary Undergraduate Mathematical Contest in Modeling

### **Awards and Honors:**

- ◇ The Third Prize of Heilongjiang Science and Technology, 2012
- ◇ The Distinguished Teacher of the Sixth Class of Heilongjiang Province, 2011
- ◇ The Second Prize of Teaching Achievement Award of Heilongjiang Higher Education, 2011
- ◇ The First Prize of Academic Achievement Award of Heilongjiang Natural Science and Technology, 2009

### **Recent Publications:**

- [1] Wu, Boying, Guo, Lihua, Zhang, Dazhi, A novel method for solving a class of second order nonlinear differential equations with finitely many singularities, Applied Mathematics Letters, 2015, 41: 1-6.
- [2] Wu, Boying, Ji, Xiaoping, Zhang, Dazhi, Fast two-phase image segmentation based on diffusion equations and gray level sets, Boundary Value Problems, 2014, 2014.
- [3] Wu, Boying, Ogada, Elisha Achieng, Sun, Jiebao, Guo, Zhichang, A Total Variation Model Based on the Strictly Convex Modification for Image Denoising, Abstract and Applied Analysis, 2014, 2014.
- [4] Wu, Boying, Yang, Yunyun, Local- and Global-Statistics-Based Active Contour

Model for Image Segmentation, *Mathematical Problems In Engineering*, 2012, 2012.

- [5] Wu, Boying, Li, Xiuying, A new algorithm for a class of linear nonlocal boundary value problems based on the reproducing kernel method, *Applied Mathematics Letters*, 2011, 24(2): 156-159.
- [6] Wu, Boying, Li, Xiuying, Second-order two-point boundary value problems using the variational iteration algorithm-II, *International Journal of Computer Mathematics*, 2011, 88(6): 1201-1207.
- [7] Wu, Boying, Qiao, Tiantian, Sun, Jiebao, Asymptotic behavior of solutions of a periodic diffusion system, *Journal of Mathematical Analysis and Applications*, 2010, 370(2): 453-460.
- [8] Wu, Boying, Li, Xiuying, Iterative reproducing kernel method for nonlinear oscillator with discontinuity, *Applied Mathematics Letters*, 2010, 23(10): 1301-1304.
- [9] Liu, Wenjie, Sun, Jiebao, Wu, Boying, Galerkin-Chebyshev spectral method and block boundary value methods for two-dimensional semilinear parabolic equations, *Numerical Algorithms*, 2016, 71(2): 437-455.
- [10] Wu, Lang, Li, Songsong, Wu, Boying, Higher-order finite volume method with semi-Lagrangian scheme for one-dimensional conservation laws, *Advances in Difference Equations*, 2015, 2015.
- [11] Gao, Shang, Wu, Boying, On input-to-state stability for stochastic coupled control systems on networks, *Applied Mathematics and Computation*, 2015, 262: 90-101.
- [12] Liu, Wenjie, Sun, Jiebao, Wu, Boying, Space-time spectral method for the two-dimensional generalized sine-Gordon equation, *Journal of Mathematical Analysis and Applications*, 2015, 427(2): 787-804.
- [13] Li, Xiuying, Wu, Boying, A numerical technique for variable fractional functional boundary value problems, *Applied Mathematics Letters*, 2015, 43: 108-113.
- [14] Shi, Kehan, Zhang, Dazhi, Sun, Jiebao, Wu, Boying, A non-divergence diffusion equation for removing impulse noise and mixed Gaussian impulse noise, *Neurocomputing*, 2015, 173: 659-670.
- [15] Dong, Gang, Guo, Zhichang, Zhang, Dazhi, Wu, Boying, Coherence-enhancing diffusion with the source term, *Applied Mathematical Modelling*, 2015, 39:

6060-6072.

- [16] Li, Xiuying, Wu, Boying, Wang, R. T., Reproducing Kernel Method for Fractional Riccati Differential Equations, *Abstract and Applied Analysis*, 2014.
- [17] Li, Xiuying, Wu, Boying, A continuous method for nonlocal functional differential equations with delayed or advanced arguments, *Journal of Mathematical Analysis and Applications*, 2014, 409(1): 485-493.
- [18] Cui, Renhao, Shi, Junping, Wu, Boying, Strong Allee effect in a diffusive predator-prey system with a protection zone, *Journal of Differential Equations*, 2014, 256(1): 108-129.
- [19] Shi, Kehan, Guo, Zhichang, Dong, Gang, Sun, Jiebao, Zhang, Dazhi, Wu, Boying, Salt-and-Pepper Noise Removal via Local Holder Seminorm and Nonlocal Operator for Natural and Texture Image, *Journal of Mathematical Imaging and Vision*, 2015, 51(3): 400-412.
- [20] Sun, Liping, Liu, Wende, Gao, Xiaocheng, Wu, Boying, Restricted Envelopes of Lie Superalgebras, *Algebra Colloquium*, 2015, 22(2): 309-320.
- [21] Liu, Wenjie, Wu, Boying, Sun, Jiebao, Space-Time Spectral Collocation Method for the One-Dimensional Sine-Gordon Equation, *Numerical Methods for Partial Differential Equations*, 2015, 31(3): 670-690.
- [22] Li, Xiuying, Wu, Boying, Approximate analytical solutions of nonlocal fractional boundary value problems, *Applied Mathematical Modelling*, 2015, 39(5-6): 1717-1724.
- [23] Liu, Wenjie, Wu, Boying, Sun, Jiebao, Some numerical algorithms for solving the highly oscillatory second-order initial value problems, *Journal of Computational Physics*, 2014, 276: 235-251.
- [24] Zhou, Guanglu, Wu, Boying, Application of the homotopy perturbation method to an inverse heat problem, *International Journal of Numerical Methods for Heat and Fluid Flow*, 2014, 24(6): 1331-1337.
- [25] Qiao, Tiantian, Li, Weiguo, Wu, Boying, Wang, Jichao, A chaotic iterative algorithm based on linearized Bregman iteration for image deblurring, *Information Sciences*, 2014, 272: 198-208.
- [26] Yang, Yunyun, Zhao, Yi, Wu, Boying, Wang, Hongpeng, A fast multiphase image segmentation model for gray images, *Computers & Mathematics with Applications*, 2014, 67(8): 1559-1581.
- [27] Sun, Liping, Liu, Wende, Wu, Boying, Low-dimensional cohomology of Lie

- superalgebra  $sl(m \text{ vertical bar } n)$  in with coefficients in Witt or Special superalgebras, *Indagationes Mathematicae*, 2014, 25(1): 59-77.
- [28] Qiao, Tiantian, Wu, Boying, Li, Weiguo, Dong, Alun, A new reweighted  $l(1)$  minimization algorithm for image deblurring, *Journal of Inequalities and Applications*, 2014.
- [29] Yang, Yunyun, Zhao, Yi, Wu, Boying, Split Bregman Method for Minimization of Fast Multiphase Image Segmentation Model for Inhomogeneous Images, *Journal of Optimization Theory and Applications*, 2014, 2014: 1-26.
- [30] Zhou, Guanglu, Wu, Boying, Identifying a time-dependent heat source with nonlocal boundary and overdetermination conditions by the variational iteration method, *International Journal of Numerical Methods for Heat and Fluid Flow*, 2014, 24(7): 1545-1552.
- [31] Zhou, Zhenyu, Guo, Zhichang, Dong, Gang, Sun, Jiebao, Zhang, DaZhi, Wu, Boying, A Double Degenerate Diffusion Model Based on the Gray Level Indicator for Multiplicative Noise Removal, *IEEE Transactions on Image Processing*, 2014, 24(1):249-60
- [32] Qiao, Tiantian, Li, Weiguo, Liu, Kai, Wu, Boying, On existence of a unique generalized solution to systems of elliptic PDEs at resonance, *Annales Polonici Mathematici*, 2014, 110(1): 25-31.
- [33] Li, Xiuying, Wu, Boying, Error estimation for the reproducing kernel method to solve linear boundary value problems, *Journal of Computational and Applied Mathematics*, 2013, 243: 10-15.
- [34] Ji, Xiaoping, Zhang, Dazhi, Guo, Zhichang, Wu, Boying, Image Denoising via Nonlinear Hybrid Diffusion, *Mathematical Problems In Engineering*, 2013, 2013.
- [35] Yang, Yunyun, Wu, Boying, A New and Fast Multiphase Image Segmentation Model for Color Images, *Mathematical Problems In Engineering*, 2012.
- [36] Yang, Yunyun, Wu, Boying, Convex Image Segmentation Model Based on Local and Global Intensity Fitting Energy and Split Bregman Method, *Journal of Applied Mathematics*, 2012.
- [37] Yang, Yunyun, Wu, Boying, Split Bregman method for minimization of improved active contour model combining local and global information dynamically, *Journal of Mathematical Analysis and Applications*, 2012, 389(1): 351-366.

- [38] Yang, Yunyun, Wu, Boying, Fast multiphase image segmentation model for images with inhomogeneity, *Journal of Electronic Imaging*, 2012, 21(1):013015-013015-14).
- [39] Cui, Zhaocheng, Wu, Boying, A new trust region method with adaptive radius for unconstrained optimization, *Optimization Methods and Software*, 2012, 27(3): 419-429.
- [40] Cui, Zhaocheng, Wu, Boying, A new modified nonmonotone adaptive trust region method for unconstrained optimization, *Computational Optimization and Applications*, 2012, 53(3): 795-806.
- [41] Guo, Zhichang, Liu, Qiang, Sun, Jiebao, Wu, Boying, Reaction-diffusion systems with  $p(x)$ -growth for image denoising, *Nonlinear Analysis: Real World Applications*, 2011, 12(5): 2904-2918.
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- [44] Zhang, Dazhi, Sun, Jiebao, Wu, Boying, Periodic solutions of a porous medium equation, *Electronic Journal of Qualitative Theory of Differential Equations*, 2011, (42): 1-7.
- [45] Qiao, Tiantian, Sun, Jiebao, Wu, Boying, Periodic solutions of a three-species periodic reaction-diffusion system, *Annales Polonici Mathematici*, 2011, 100(2): 179-191.
- [46] Li, Xiuying, Wu, Boying, A novel method for nonlinear singular fourth order four-point boundary value problems, *Computers & Mathematics with Applications*, 2011, 62(1): 27-31.
- [47] Li, Xiuying, Wu, Boying, Periodic boundary value problems for neutral multi-pantograph equations, *Computers & Mathematics with Applications*, 2011, 61(8): 1983-1986.
- [48] Li, Jing, Sun, Jiebao, Wu, Boying, Periodic doubly degenerate parabolic equation with nonlocal terms, *Computers & Mathematics with Applications*, 2010, 60(3): 490-500.
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simulation of a Hall thruster, *Journal of Physics D: Applied Physics*, 2010, 43(16).

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