

CURRICULUM VITAE

Shu-Ming Chang

Department of Applied Mathematics

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- Academic Degrees

B.S., Fu Jen Catholic University, Taiwan, 1997 (Mathematics, Section of Applied Mathematics).

M.S., National Tsing Hua University, Taiwan, 1999 (Mathematics, Section of Applied Mathematics, Scientific Computations).

Ph.D., National Tsing Hua University, Taiwan, 2003 (Mathematics, Numerical Analysis).

- Academic Positions

2021, Feb. – present, Department of Applied Mathematics, National Yang Ming Chiao Tung University, Associate Professor.

2021, Feb. – 2022, Jul., Department of Applied Mathematics, National Yang Ming Chiao Tung University, Director of MMSC Master Program.

2021, Feb. – 2023, Jul., Department of Computer Science, National Yang Ming Chiao Tung University, Jointly Appointed Professor.

2016, Aug. – 2021, Jan., Department of Computer Science, National Chiao Tung University, Jointly Appointed Professor.

2016, Aug. – 2021, Jan., Department of Applied Mathematics, National Chiao Tung University, Director of MMSC Master Program.

2012, Aug. – 2021, Jan., Department of Applied Mathematics, National Chiao Tung University, Associate Professor.

2008, Feb. – 2012, Jul., Department of Applied Mathematics, National Chiao Tung University, Assistant Professor.

2003, Oct. – 2008, Jan., Department of Mathematics, National Tsing Hua University, Postdoctoral Fellow.

- Research Interests

Numerical Analysis, Scientific Computations, Dynamical Systems.

- Awards and Honors

Outstanding Teaching Award of National Chiao Tung University, 2016.

- Research Activity

- ★ Local

- 2004, December, Dept. Math of NTU, “2004 Mathematical Conference and Annual Meeting of the Mathematical Society”, Contributed Speaker.
- 2006, April, Sun-Moon-Lake, “2nd Workshop of Numerical Algebra and Applications”, Invited Speaker.
- 2007, June, Dept. App. Math of NSYSU, “2007 Computational Mathematics Conference”, Invited Speaker.
- 2007, December, Academia Sinica, “2007 Mathematical Conference and Annual Meeting of the Mathematical Society”, Contributed Speaker.
- 2008, March, Kenting, “4th Workshop of Numerical Algebra and Applications”, Invited Speaker.
- 2008, December, Dept. Math of NTHU, “2008 Mathematical Conference and Annual Meeting of the Mathematical Society”, Contributed Speaker.
- 2009, April, Nan-Chuang (Hsinchu), “5th Workshop of Numerical Algebra and Applications”, Organizer.
- 2010, April, Pu-Shin (Taoyuan), “6th Workshop of Numerical Algebra and Applications”, Invited Speaker.
- 2010, December, Dept. Math of National Changhua University of Education, “2010 Mathematical Conference and Annual Meeting of the Mathematical Society”, Contributed Speaker.
- 2011, April, National Chiao Tung University, “12th Workshop on Computational Mathematics”, Co-Organizer.
- 2011, June, Si-Tou (Nantou), “7th Workshop of Numerical Algebra and Applications”, Invited Speaker.
- 2011, December, NCTS, “Interdisciplinary Workshop between Mathematics and Theoretical Physics: Cold Atom System and Its Mathematical Models”, Invited Speaker.
- 2012, April, Gu-Keng (Yunlin), “8th Workshop of Numerical Algebra and Applications”, Invited Speaker.

- ★ International

- 2004, September, Chalkis, Greece, “International Conference on Numerical Analysis and Applied Mathematics 2004”, Contributed Speaker.
- 2004, December, Hong Kong, China, “The Third International Congress of Chinese Mathematicians”, Contributed Speaker.
- 2006, July, Düsseldorf, Germany, “Joint GAMM-SIAM Conference on Applied Linear Algebra”, Contributed Speaker.
- 2007, July, Zürich, Switzerland, “6th International Congress on Industrial and Applied Mathematics”, Chairman & Contributed Speaker.
- 2008, July, Amsterdam, Netherlands, “5th European Congress of Mathematics”, Poster.
- 2009, July, London, U.K., “2009 International Conference of Applied and Engineering Mathematics”, Contributed Speaker.

- 2010, June, Berlin, Germany, “8th International Workshop on Accurate Solution of Eigenvalue Problems”, Present.
- 2011, June, Waseda University, Fukuoka, Japan, “7th East Asia SIAM Conference”, Chairman & Contributed Speaker.
- 2011, August, Braunschweig, Germany, “17th International Linear Algebra Society Conference with special emphasis on young speakers”, Contributed Speaker.
- 2013, January, Sanya, China, “2013 Tsinghua-Sanya International Mathematical Forum”, Invited Speaker.

PUBLICATIONS

A. Refereed Papers

1. **S. M. Chang**, T. C. Lin, and W. W. Lin, *Chaotic and Quasiperiodic Motions of Three Planar Charged Particles*, **Int. J. Bifurcation Chaos**, Vol. 11, No. 7 (2001), pp. 1937–1951. (SCI)
2. **S. M. Chang**, T. C. Lin, and W.-W. Lin, *Dynamics of Vortices in Two-Dimensional Bose-Einstein Condensates*, **Int. J. Bifurcation Chaos**, Vol. 12, No. 4 (2002), pp. 739–764. (SCI)
3. **S. M. Chang**, C. S. Lin, T. C. Lin, and W. W. Lin, *Segregated Nodal Domains of Two-Dimensional Multispecies Bose-Einstein Condensates*, **Physica D**, Vol. 196, Issues 3-4 (2004), pp. 341–361. (SCI)
4. **S. M. Chang**, W. W. Lin, and S. F. Shieh, *Gauss-Seidel-type Methods for Energy States of a Multi-Component Bose-Einstein Condensate*, **J. Comput. Phys.**, Vol. 202, Issue 1 (2005), pp. 367–390. (SCI)
5. **S. M. Chang**, Y. C. Kuo, W. W. Lin, and S. F. Shieh, *A Continuation BSOR-Laczos-Galerkin Method for Positive Bound States of a Multi-Component Bose-Einstein Condensate*, **J. Comput. Phys.**, Vol. 210, Issue 2 (2005), pp. 439–458. (SCI)
6. C. Juang, **S. M. Chang**, N. K. Hu, Charleson Lee, and W. W. Lin, *Laser Chaos Induced by Delayed-Feedback and External Modulation*, **Jpn. J. Appl. Phys.**, Vol. 44, No. 11 (2005), pp. 7827–7831. (SCI)
7. **S. M. Chang**, S. Gustafson, K. Nakanishi and T. P. Tsai, *Spectra of Linearized Operators for NLS Solitary Waves*, **SIAM J. Math. Anal.**, Vol. 39, No. 4 (2007), pp. 1070–1111. (SCI)
8. S. L. Chen, **S. M. Chang**, W. W. Lin and T. T. Hwang, *Digital Secure-Communication Using Robust Hyper-Chaotic Systems*, **Int. J. Bifurcation Chaos**, Vol. 18, No. 11 (2008), pp. 3325–3339. (SCI)
9. **S. M. Chang**, M. C. Li and W. W. Lin, *Asymptotic Synchronization of Modified Logistic Hyper-Chaotic Systems and Its Applications*, **Nonlinear Analysis-Real World Applications**, Vol. 10, Issue 2 (2009), pp. 869–880. (SCI)
10. F. Y. Lin, S. Y. Tu, C. C. Huang and **S. M. Chang**, *Nonlinear Dynamics of Semiconductor Lasers under Repetitive Optical Pulse Injection*, **IEEE Journal of Selected Topics in Quantum Electronics**, Vol. 15, No. 3 (2009), pp. 604–611. (SCI)
11. S. L. Chen, T. T. Hwang, **S. M. Chang** and W. W. Lin, *A Fast Digital Chaotic Generator for Secure Communication*, **Int. J. Bifurcation Chaos**, Vol. 20, No. 12 (2010), pp. 3969–3987. (SCI)
12. **S. M. Chang** and H. H. Chen, *Applying Snapback Repellers in Resource Budget Models*, **Chaos**, Vol. 21, Issue 4, 043126 (2011). (SCI)

C. Thesis

1. **S. M. Chang**, *Chaos for the Motion of Three Point Vortices in a Nonlinear Wave Equation*, Master Thesis, Department of Mathematics, National Tsing Hua University, Hsinchu, Taiwan, 1999.
2. **S. M. Chang**, *Numerical Study of Multi-Component Bose-Einstein Condensates*, Ph.D. Thesis, Department of Mathematics, National Tsing Hua University, Hsinchu, Taiwan, September 2003.

D. Technical Reports

1. S. L. Chen, **S. M. Chang**, W. W. Lin and T. T. Hwang, *Toolbox for Key Space Testing of Robust Hyper-Chaotic System*, NCTS Preprints Series 2006-7-016, Taiwan, 2006.
2. S. L. Chen, **S. M. Chang**, W. W. Lin and T. T. Hwang, *Experiment Results of Key Space Testing of Robust Hyper-Chaotic System*, NCTS Preprints Series 2006-7-020, Taiwan, 2006.
3. **S. M. Chang** and L. L. Liu, *A Study to the $3n + 1$ Problem with State Transition Model*, NCTS Preprints Series 2011-3-002, Taiwan, 2011.