Te-Sheng Lin (林得勝)

Department of Applied Mathematics
National Chiao Tung University
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Appointments

Assistant Professor, Department of Applied Mathematics, Aug. 2014 - present
National Chiao Tung University, Taiwan.

Research Associate, Department of Mathematical Sciences, Dec. 2012 - Jul. 2014
Loughborough University, UK.

Marie Curie Experienced Researcher, Department of Mathematical Sciences, Jun. 2012 - Dec. 2012
Loughborough University, UK.

Education

New Jersey Institute of Technology, USA
Ph.D. in Applied Mathematics Sep. 2007 - May. 2012
Dissertation: "Instabilities in Newtonian films and nematic liquid crystal droplets."
Advisors: Dr. Lou Kondic and Dr. Linda J. Cummings

National Chung-Cheng University, Taiwan
M.S. in Applied Mathematics Sep. 2002 - Jun. 2004
Thesis: "Numerical methods for the nonlinear Schrödinger equation."
Advisor: Dr. Ming-Chih Lai

B.S. in Mathematics Sep. 1998 - Jun. 2002

Prizes and Awards:

1. 國立交通大學理學院年輕學者研究獎 2019

Grants

7. MOST 108-2115-M-075-001, (Co-PI) Aug. 2019 - Jul. 2020
   Building knowledge base for manifold learning in medical diagnosis in clinical anesthesiology
6. MOST 107-2115-M-075-001, (Co-PI) Aug. 2018 - Jul. 2019
   Manifold learning for human circulation system modeling in clinical anesthesiology and critical care
5. MOST 107-2115-M-009-008-MY2, (PI) Aug. 2018 - Jul. 2020
   Bifurcation analysis of electrified falling liquid films
4. MOST 106-2115-M-075-001, (Co-PI) Aug. 2017 - Jul. 2018
   Momentary pulse waveform analysis and human cardiovascular system modeling for clinical anesthesiology
3. MOST 105-2115-M-009-008-MY2, (PI) Aug. 2016 - Jul. 2018
   Modeling thin nematic films: Weak anchoring model

2. MOST 105-2115-M-341-001-MY2, (Co-PI) Feb. 2016 - Jul. 2017
   Human cardiovascular system modeling for beat-to-beat pulse waveform analysis in clinical anesthesia

1. MOST 103-2115-M-009-015-MY2, (PI) Oct. 2014 - Jul. 2016
   Interaction theory for solitary pulses arising in falling film flows

Refereed Publications

18. D. Tseluiko, M. Alesemi, T.-S. Lin, and U. Thiele, Effect of driving on coarsening dynamics in phase-separating systems, *Non.*, in press (2020).

17. T.-S. Lin, W.-F. Hu, and C. Misbah, A direct Poisson solver in spherical geometry with an application to diffusiophoretic problems, *J. Comp. Phys.*, **409**, 109362 (2020).

16. T.-S. Lin, C.-Y. He and W.-F. Hu, Fast spectral solver for Poisson equation on an annular domain, *Ann. Math. Sci. App.*, **5(1)**, 65-74 (2020).

15. W.-F. Hu, T.-S. Lin, S. Rafai and C. Misbah, Chaotic swimming of phoretic particles, *Phys. Rev. Lett.*, **123**, 238004 (2019).

14. M. G. Blyth, D. Tseluiko, T.-S. Lin and S. Kalliadasis, Two-dimensional pulse dynamics and the formation of bound states on electrified falling films, *J. Fluid Mech.*, **855**, 210-235 (2018).

13. T.-S. Lin, D. Tseluiko, M. G. Blyth and S. Kalliadasis, Continuation methods for time-periodic travelling-wave solutions to evolution equations, *Appl. Math. Lett.*, **86**, 291-297 (2018).

12. T.-S. Lin, S. Rogers, D. Tseluiko and U. Thiele, Bifurcation analysis of the behavior of partially wetting liquids on a rotating cylinder, *Phys. Fluids*, **28**, 082102 (2016).

11. C. Honisch, T.-S. Lin, A. Heuer, U. Thiele and S. Gurevich, Instabilities of layers of deposited molecules on chemically stripe patterned substrates: Ridges vs. drops, *Langmuir*, **31**, 10618-10631 (2015).

10. M. A. Lam, L. J. Cummings, T.-S. Lin and L. Kondic, Three-dimensional coating flow of nematic liquid crystal on an inclined substrate, *Euro. J. Appl. Math.*, **26**, 647-669 (2015).

9. T.-S. Lin, M. Pradas, S. Kalliadasis, D. T. Papageorgiou and D. Tseluiko, Coherent structures in non-local dispersive active-dissipative systems, *SIAM J. Appl. Math.*, **75**, 538-563 (2015).

8. M. A. Lam, L. J. Cummings, T.-S. Lin and L. Kondic, Modeling flow of nematic liquid crystal down an incline, *J. Eng. Math.*, **94**, 97-113 (2015).

7. T.-S. Lin, L. J. Cummings, A. J. Archer, L. Kondic and U. Thiele, Note on the hydrodynamic description of thin nematic films: strong anchoring model, *Phys. Fluids*, **25**, 082102 (2013).

6. T.-S. Lin, L. Kondic, U. Thiele and L. J. Cummings, Modelling spreading dynamics of nematic liquid crystals in three spatial dimensions, *J. Fluid Mech.*, **729**, 214-230 (2013).

5. T.-S. Lin, L. Kondic and A. Filippov, Thin films flowing down inverted substrates: three dimensional flow, *Phys. Fluids*, **24**, 022105 (2012).

4. T.-S. Lin, L. Kondic and L. J. Cummings, Defect modelling in spreading nematic droplets, *Phys. Rev. E*, **85**, 012702 (2012).

3. L. J. Cummings, T.-S. Lin and L. Kondic, Modelling and simulations of the spreading and destabilization of nematic droplets, *Phys. Fluids*, **23**, 043102 (2011).

2. T.-S. Lin and L. Kondic, Thin films flowing down inverted substrates: two dimensional flow, *Phys. Fluids*, **22**, 052105 (2010).

1. M.-C. Lai, C.-Y. Huang and T.-S. Lin, A simple Dufort-Frankel type scheme for the Gross-Pitaevskii equation of Bose-Einstein condensates on different geometries, *Numer. Methods for Partial Diff. Eqs.*, **20**, 624-638 (2004).

Conference papers

1. T.-S. Lin, D. Tseluiko and S. Kalliadasis, Numerical study of a non-local weakly nonlinear model for a liquid film sheared by a turbulent gas, *Procedia IUTAM*, **11**, 98 (2014).

Presentations

An introduction to ultraspherical spectral method, Feb. 2020
2020 Workshop on Applied Mathematics and Scientific Computing
National University of Kaohsiung, Kaohsiung, Taiwan.

Autophoretic motion of an isotropic particle, Dec. 2019
2019 28th Annual Workshop on Differential Equations
Institute of Mathematics, Academia Sinica, Taiwan.

Two dimensional pulse dynamics and on electrified falling films, Apr. 2019
Modelling of Thin Liquid Films-Asymptotic Approach vs. Gradient Dynamics
BIRS, Canada.

Autophoretic motion of an isotropic particle, Mar. 2019
2019 Spring Progress in Mathematical and Computational Studies on Science and Engineering Problems
Taiwan-India Joint Conference - Recent Progress on Flow Simulation and Stability Analysis
CASTS, National Taiwan University, Taiwan.

Continuation methods and numerical bifurcation analysis, Dec. 2018
AMMS 2018, National Taiwan Normal University, Taiwan.

Two dimensional pulse dynamics and on electrified falling films, Nov. 2018
Taiwan-Japan Joint Workshop on Scientific Computing and Related Topics, Taipei, Taiwan.

Continuation method for time-periodic traveling-wave solutions to evolution equations, May 2018
6th TWSIAM Annual Meeting, National Taiwan University of Science and Technology, Taipei, Taiwan.

Numerical continuation of solutions of evolution equations, Dec. 2017
AMMS 2017, National Chiayi University, Taiwan.

Bifurcation analysis of the behavior of partially wetting liquids on a rotating cylinder, Mar. 2017
2017 Spring Special Program in Applied Mathematics and Applied Mechanics.
Taida Institute for Mathematical Sciences(TIMS), Taiwan.

Bifurcation analysis of the behavior of partially wetting liquids on a rotating cylinder, Mar. 2017
2017 Conference on Advanced Topics and Auto Tuning in High-Performance Scientific Computing, Taiwan.

Bifurcation analysis of the behavior of partially wetting liquids on a rotating cylinder, Dec. 2016
2016 NCTS Workshop on Complex and Biological Fluid Dynamics with Applications, Taiwan.

Bifurcation analysis of the behavior of thin liquid films, Jan. 2016
2016 One-day workshop on numerical PDEs, National Chung Hsing University, Taiwan.

The behavior of partially wetting liquids on a rotating cylinder, Dec. 2015
AMMS 2015, National University of Kaohsiung, Taiwan.

Coherent-structure theory and bound-state formation in electrified falling films, Nov. 2015
APS Division of Fluid Mechanics Annual Meeting, Boston, USA.
Bull. Amer. Phys. Soc., **60**, 440, Boston, MA, November 2015.

Interfacial phenomena in thin liquid films: mathematical modeling and scientific computation, July 2015
Center for Nonlinear Science, University of Münster, Münster, Germany.

Interfacial phenomena in thin liquid films: A computational investigation, May 2015
2015 NCTS 計算數學薪傳及新苗研討會, NCTU, Hsinchu, Taiwan.

Pulse interaction and bound state formation in falling liquid films, Dec. 2014
AMMS 2014, National Cheng Kung University, Taiwan.

Pulse interaction and bound state formation in non-local dispersive active-dissipative systems, Apr. 2014
British Applied Mathematics Colloquium, Cardiff, UK.

Coherent structures in non-local active-dissipative equations, Nov. 2013
APS Division of Fluid Mechanics Annual Meeting, Pittsburgh, USA.
Bull. Amer. Phys. Soc., **58**, 45, Pittsburgh, PA, November 2013.

Hydrodynamic description of thin nematic films, May 2013
The Mathematics of Liquid Crystals - Young Researchers Meeting,
Isaac Newton Institute for Mathematical Sciences, Cambridge, UK.

Instabilities in thin hanging films, Oct. 2012
International focus workshop in Multiscale Complex Fluid Flows and Interfacial Phenomena,
Max-Planck-Institut für Physik komplexer Systeme, Dresden, Germany.

Contact line induced instabilities for thin fluid films, Nov. 2011
APS Division of Fluid Mechanics Annual Meeting, Baltimore, USA.
Bull. Amer. Phys. Soc., **56**, 56, Baltimore, MD, November 2011.

Contact line induced instability in hanging fluid film, Jul. 2011
ICIAM 2011, Vancouver, BC, Canada.

Modeling spreading of nematic liquid crystal droplets, Apr. 2011
AMS 2011 Spring Eastern Sectional Meeting, Worcester, USA.
Proceedings of the 1070th AMS Meeting, 103, Worcester, MA, April 2011.

Instabilities in Newtonian films and nematic liquid crystal droplets, Feb. 2011
Liquid Crystal Institute, Kent State University, USA.

Thin films: instabilities, waves, and dewetting, Nov. 2010
APS Division of Fluid Mechanics Annual Meeting, Long Beach, USA.
Bull. Amer. Phys. Soc., **55**, 139, Long Beach, CA, November 2010.

On contact line induced instability in flow of hanging fluid films, Nov. 2009
APS Division of Fluid Mechanics Annual Meeting, Minneapolis, USA.
Bull. Amer. Phys. Soc., **53**, 48, Minneapolis, MN, November 2009.

Services

Referee: Applied Mathematics and Computation; AIP Advances; European Journal of Applied Mathematics; European Journal of Mechanics B/Fluids; IMA Journal of Applied Mathematics; Journal of Colloid and Interface Science; Journal of Computational Physics; Journal of Engineering Mathematics; Journal of Fluid Mechanics; Physics of Fluids; Proceedings A; Taiwanese Journal of Mathematics; Zeitschrift für Angewandte Mathematik und Mechanik.