SHANG-HUAN CHIU

Department of Mathematics

Lehigh University

Chandler-Ullmann Hall, Room 225

17 Memorial Drive East, Bethlehem, PA 18015

schiu.twn@gmail.com

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EDUCATION

University of Houston, Houston, Texas *August 2017*
Ph.D. in Mathematics.
Thesis Advisor: Tsorng-Whay Pan
Title: "3D DLM/FD Methods for Simulating the Motion of Spheres in Bounded Shear Flows of Oldroyd-B fluids"

National Tsing Hua University, Hsinchu, Taiwan *June 2011*
Master of Science in Applied Mathematics
Thesis Advisor: Shuh-Jye Chern
Title: "Electromechanical System: Formulation and Stability "

National Central University, Taoyuan, Taiwan *January 2007*
Bachelor of Science in Mathematics
Education program—Secondary Education

EXPERIENCE

C.-C. Hsiung Visiting Assistant Professor, Department of Mathematics, Lehigh University	*2022-present*
Postdoctoral Fellow, Dept. of Mathematical, Physical, and Engineering Sciences, Texas A&M-San Antonio	*2021-2022*
Postdoctoral Fellow, Dept. of Mathematical Sciences, New Jersey Institute of Technology	*2019- 2021*
Postdoctoral Fellow, Dept. of Scientific Computing, Florida State University	*2018-2019*
Postdoctoral Fellow, Dept. of Mathematics, University of Houston	*2017-2018*
Instructor, Dept. of Mathematics, University of Houston	*2017-2018*
Research Assistant, Dept. of Mathematics, University of Houston	*2014-2017*
Teaching Assistant, Dept. of Mathematics, University of Houston	*2012-2017*
Teaching Assistant, Dept. of Mathematics, National Tsing Hua University	*2009-2011*

PUBLICATIONS AND PREPRINTS

T.-W. Pan, A. Guo, S.-H. Chiu, R. Glowinski, A 3D DLM/FD method for simulating the motion of spheres and ellipsoids under creeping flow conditions. Journal of Computational Physics 352 (2018), 410-425.

S.-H. Chiu, T.-W. Pan, R. Glowinski, A 3D DLM/FD method for simulating the motion of spheres in an Oldroyd-B fluid under creeping flow conditions. Computers and Fluids 172 (2018), 661-673.

T.-W. Pan, S.-H. Chiu, R. Glowinski, Numerical study of two balls settling in viscoelastic fluids from an initial vertical configuration. Physics of Fluids 31 (2019), 123104 (Featured Article).

S.-H. Chiu, M. N. J. Moore, B. D. Quaife, Viscous Transport in Eroding Porous Media. Journal of Fluid Mechanics, 893, 2020, (Cover Image).

M. N. J. Moore, J. Cherry, S.-H. Chiu, B. D. Quaife, How fluid-mechanical erosion creates anisotropic porous media. Physica D: Nonlinear Phenomena (2022), 133634.

T.-W. Pan, S.-H. Chiu, A. Guo, J. He, Numerical study of lid-driven flow in shallow cavities. Comptes Rendus Mécanique 351 (S1), 1-17.

T.-W. Pan, S.-H. Chiu. A DLM/FD method for simulating balls settling in Oldroyd-B viscoelastic fluids. Journal of Computational Physics 484 (2023).

B. Aksoylu, F. Celiker, S.-H. Chiu, Peridynamic differential operator discretization of the incompressible Navier-Stokes equations using the projection method. In Preparation.

E. Lushi, S.-H. Chiu, N, Netznik, K. Wall, Aligning self-propelling particles in confinement. In Preparation.

E. Lushi, S.-H. Chiu, F. Zumpano, Separating motile and immotile bacteria through confined chemotaxis. In Preparation.

S.-H. Chiu, T.-W. Pan, R. Glowinski, A 3D DLM/FD method for simulating the motion of an ellipsoid in an Oldroyd-B fluid under creeping flow conditions. In Preparation.

S.-H. Chiu, T.-W. Pan, J. He, A. Guo, R. Glowinski, Transition from steady to oscillatory for 3D lid-driven cubic cavity flow: A numerical study. arXiv:1604.06926.

TEACHING

Lehigh University, Department of Mathematics

Linear Methods (section number: 014, student number: 33)	*Fall 2023*
Linear Methods (section number: 010, student number: 40)	*Fall 2022*
Linear Methods (section number: 013, student number: 40)	*Fall 2022*
Calculus III (guest speaker)	*Fall 2022*

Texas A&M-San Antonio, Department of Mathematics, Physical, and Engineering Sciences

Precalculus (student number: 30)	*Summer 2022*
Precalculus (section number: 004, student number: 30)	*Spring 2022*
Precalculus (section number: 005, student number: 30)	*Spring 2022*

University of Houston, Department of Mathematics

Linear Algebra (student number: 73)	*Spring 2018*
Linear Algebra Online Class (student number: 77)	*Spring 2018*
Linear Algebra (student number: 74)	*Fall 2017*
Linear Algebra Online Class (student number: 112)	*Fall 2017*
Linear Algebra Labs with MATLAB(Instructor of record and course developer)	*Summer 2017*
Linear Algebra Labs with MATLAB(Instructor of record and course developer)	*Spring 2017*
Honors Calculus I Recitation	*Fall 2016, Fall 2015*
Honors Calculus II Recitation	*Spring 2016*
Calculus I Recitation	*Fall 2012, Fall 2013, Spring 2015*
Calculus II Recitation	*Spring 2013, Spring 2014, Summer 2014*

CONFERENCES AND WORKSHOPS ATTENDED

The first SIAM NNP Conference 2023. New Jersey Institute of Technology, Newark, NJ. *October 20-22, 2023*

APS March Meeting 2021. Virtual. *March 15-19, 2021*

Viscoelastic Flow Instabilities and Elastic Turbulence Zoom conference. Princeton University, Princeton, NJ (Virtual). *January 4-7, 2021*

The 73Th Annual Meeting of the APS Division of Fluid Dynamics. Chicago, IL (Virtual). *November 22-24, 2020*

The 13th Northeast Complex Fluids and Soft Matter Workshop . City College of New York, New York, NY. *June 19, 2020*

The 12th Northeast Complex Fluids and Soft Matter Workshop . Manhattan College, Riverdale, NY. *January 17, 2020*

The 72Th Annual Meeting of the APS Division of Fluid Dynamics. Seattle, WA. *November 23-26, 2019*

Mid-Atlantic Numerical Analysis Day. Temple University, Philadelphia, PA.*November 15, 2019*

The 43rd Annual Meeting of SIAM Southeastern Atlantic Section. University of Tennessee, Knoxville, TN. *September 21-22, 2019*

71Th Annual Meeting of the APS Division of Fluid Dynamics. Atlanta, GA. *November 18-20, 2018*

2018 Shanks Workshop on Mathematical Aspects of Fluid Dynamics. Vanderbilt University, Nashville, TN. *March 24-25, 2018*

70Th Annual Meeting of the APS Division of Fluid Dynamics. Denver, CO. *November 19-21, 2017*

69Th Annual Meeting of the APS Division of Fluid Dynamics. Portland, OR. *November 20-22, 2016*

TALKS

Nonlocal RANS Model with Data-Driven Learning. SIAM NNP Conference 2023. New Jersey Institute of Technology, Newark, New Jersey. *October 22, 2023*

The Motions of Particles and the Interactions with Fluid in Confinement. Postdoctoral Day. Departemnt of Mathematics, Lehigh University. *September 2, 2022*

Viscous Transport in Eroding Porous Media. Applied Mathematics Seminar. Departemnt of Mathematics and Statistics, Texas Tech University. *March 24, 2021*

Separating Motile and Immotile Bacteria through Confined Chemotaxis. APS March Meeting 2021 (Virtual). *March 16, 2021*

Binary Encounters and Erosion of Bodies in Stokes Flows. The Complex Flow Laboratory, Purdue University, West Lafayette, IN. *October 29, 2020*

The Wave Instability in Two-Phase Flows of Non-Newtonian Fluids. The Northeast Complex Fluids and Soft Matter Workshop. City College of New York, New York, NY. *June 19, 2020*

Erosion and Binary Encounters of Bodies in Stokes Flows. Applied Mathematics Colloquium. New Jersey Institute of Technology, Newark, NJ. *April 24, 2020*

Viscous Transport in Eroding Porous Media. The Northeast Complex Fluids and Soft Matter Workshop. Mahattan College, Riverdale, NY. *January 17, 2020*

Viscous Transport in Eroding Porous Media. Annual Meeting of the APS Division of Fluid Dynamics. Seattle, WA. *November 26, 2019*

Viscous Transport in Eroding Porous Media. Mid-Atlantic Numerical Analysis Day. Temple University, Philadelphia, PA. *November 15, 2019*

Viscous Transport in Eroding Porous Media. Annual Meeting of SIAM Southeastern Atlantic Section. University of Tennessee, Knoxville, TN. *September 21, 2019*

Spheres settling in an Oldroyd-B fluid. Annual Meeting of the APS Division of Fluid Dynamics. Atlanta, GA. *November 19, 2018*

Three Dimensional DLM/FD Methods for Simulating the Motion of Spheres in Bounded Shear Flows of Oldroyd-B Fluids. Scientific Computing Seminar. Florida State University, Tallahassee, FL. *September 12, 2018*

Sphere interactions in bounded shear flow of Oldroyd-B fluid. Shanks Workshop on Mathematical Aspects of Fluid Dynamics. Vanderbilt University, Nashville, TN. *March 24, 2018*

Sphere interactions in bounded shear flow of Oldroyd-B fluid. Annual Meeting of the APS Division of Fluid Dynamics. Denver, CO. *November 19, 2017*

Dynamics of two balls in bounded shear flow of Oldroyd-B fluid. Finite Element Rodeo. University of Houston, Houston, TX. *March 3, 2017*

Dynamics of two balls in bounded shear flow of Oldroyd-B fluid. Annual Meeting of the APS Division of Fluid Dynamics. Portland, OR. *November 22, 2016*

POSTERS

Viscous Transport in Eroding Porous Media. 7th Annual Postdoctoral Symposium. Florida State University, FL. *September 20, 2019*

Dense Packing of Eroding Bodies. Computational Expostion 2019. Florida State University, Tallahassee, FL *April 19, 2019*

References

Tsorng-Whay Pan, Professor pan@math.uh.edu
(713)743-3448

Bryan Quaife, Associate Professor bquaife@fsu.edu
(512)436-1148

Terrence Napier, Professor/Department Chair at Lehigh University tjn2@lehigh.edu
(610)758-3755

Vincent Coll, Professor of Practice vec208@lehigh.edu
(610) 758-3741

Yue Yu, Professor yuy214@lehigh.edu
(610) 758-3752

Jiwen He, Professor/Department Chair at University of Houston jhe4@central.uh.edu
(713)743-3481

SERVICE

Travel Award Committee. Florida State University, Tallahassee, FL. *since Fall 2019.*