

Lei Fang

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EDUCATION

2017 - 2020 **Stanford University, Stanford, California**

Ph.D., Civil and Environmental Engineering

Ph.D. minor, Computational and Mathematical Engineering

2015 - 2017 **Stanford University, Stanford, California**

M.S., Civil Engineering and Environmental Engineering

2012 - 2015 **Colorado State University, Fort Collins, Colorado**

B.S., *cum laude*, *First Place in the Department*, Environmental Engineering,
Colorado State University

PEER-REVIEWED JOURNAL PUBLICATIONS (students are underlined)

- 2020 **L. Fang**, S. Balasuriya, and N. T. Ouellette, "Disentangling resolution, precision, and inherent stochasticity in nonlinear systems," *Physical Review Research* 2, 023343 (2020).
- 2020 Z. Zhou, **L. Fang**, N. T. Ouellette, and H. Xu, "Vorticity gradient stretching in the direct enstrophy transfer process of two-dimensional turbulence," *Physical Review Fluids* 5, 054602 (2020).
- 2020 Xinyu Si and **L. Fang**. "Preferential alignment and heterogeneous distribution of active non-spherical swimmers near Lagrangian coherent structures," Submitted.
- 2020 **L. Fang** and N. T. Ouellette. "Assessing the information content of complex flows," Submitted.
- 2020 **L. Fang** and N. T. Ouellette. "Spectral energy condensation in two-dimensional turbulence," In prep.
- 2019 **L. Fang**, S. Balasuriya, and N. T. Ouellette, "Local linearity, coherent structures, and scale-to-scale coupling in turbulent flow," *Physical Review Fluids* 4, 014501 (2019).
- 2019 **L. Fang** and N. T. Ouellette, "Transport across a bathymetric interface in quasi-two-dimensional flow," *Physical Review Fluids* 4, 064501 (2019).
- 2018 **L. Fang** and N. T. Ouellette, "Influence of lateral boundaries on transport in quasi-two-dimensional flow," *Chaos* 28, 023113 (2018). **Chosen as a Featured paper in Chaos**, and summarized in an **AIP Scilight**.

- 2017 **L. Fang** and N. T. Ouellette, “Multiple stages of decay in two-dimensional turbulence,” *Phys. Fluids* 29, 111105 (2017).
- 2016 **L. Fang** and N. T. Ouellette, “Advection and the efficiency of spectral energy transfer in two-dimensional turbulence,” *Phys. Rev. Lett.* 117, 104501 (2016).

CONFERENCE AND ACADEMIC PRESENTATIONS

- 2019 **L. Fang**, N. T. Ouellette “Enhanced Spectral Transfer in Weakly Mixing Regions of a Turbulent Flow,” The 72nd Annual Meeting of the APS Division of Fluid Dynamics, November 23-26, Seattle, Washington, USA
- 2019 N. T. Ouellette, **L. Fang** and S. Balasuriya “Disentangling Resolution, Precision, and Inherent Stochasticity in Fluid Mixing,” The 72nd Annual Meeting of the APS Division of Fluid Dynamics, November 23-26, Seattle, Washington, USA
- 2018 **L. Fang**, N. T. Ouellette and S. Balasuriya “Local linearity, coherent structures, and scale-to-scale coupling in turbulent flow,” The 71st Annual Meeting of the APS Division of Fluid Dynamics, November 18-20, Atlanta, Georgia, USA
- 2017 **L. Fang**, N. T. Ouellette “Multiple stages of decay in two-dimensional turbulence,” The 70th Annual Meeting of the APS Division of Fluid Dynamics, November 19-21, Denver, Colorado, USA
- 2016 N. T. Ouellette, **L. Fang** “Advection and the efficiency of spectral energy transfer in two-dimensional turbulence,” The 69th Annual Meeting of the APS Division of Fluid Dynamics, November 20-22, Portland, Oregon, USA

INVITED TALKS

- 2019 **L. Fang** “Coherent Dynamics in Model Geophysical Flows,” Department of Mechanical Engineering, University of California, Berkeley, October 25, Berkeley, California, USA
- 2019 **L. Fang** “Coherent Dynamics in Model Geophysical Flows,” Department of Civil and Environmental Engineering, University of Pittsburgh, January 9, Pittsburgh, Pennsylvania, USA

ACADEMIC POSITIONS

- 2020 - present **Assistant Professor (tenure track)**
Civil and Environmental Engineering, University of Pittsburgh
- 2016 - 2020 **Graduate Research Assistant**
Civil and Environmental Engineering, Stanford University
Advisor: Prof. Nicholas T. Ouellette
supported by the U.S. NSF under Grant No. CMMI-1563489

2014 Summer **Research Assistant**
Colorado State University, Engineering Research Center

RESEARCH EXPERIENCES AND INTERESTS

Coherent transport in geophysical flows

Two-dimensional turbulence dynamics

Fluid mechanics of disease transmission

Crowd dynamics

Developing physical tools for flow structure probing (Linear Neighborhood and Dynamical Linear Neighborhood)

TEACHING EXPERIENCES

2019 **An Invited Lecture**, Civil and Environmental Engineering, Stanford University

Course: “Introduction to Ph.D. Studies in Civil and Environmental Engineering”, graduate level

2019 **Teaching Assistant with Course Development**, Civil and Environmental Engineering, Stanford University

Course: “Nonlinear Dynamics”, graduate level

2014 **Tutor**, Civil and Environmental Engineering, Colorado State University

Course: “Fluid Mechanics”, undergraduate level

MENTORSHIPS

2019 Zeyou Zhou, Ph.D. student, Tsinghua University

Mentoring Content: Filter space technique

Resulting Publication: Z. Zhou L. Fang, H. Xu, and N. T. Ouellette, “Vorticity gradient stretching is the possible physical mechanism of two-dimensional direct enstrophy transfer,” In manuscript

2018 Yalin Mao, M.S. student, University of California, Los Angeles

Mentoring Content: Machine learning algorithms

2017 Marios Galanis, M.S. student, Stanford University

Mentoring Content: Probing flow structures using hyperbolic neighborhood (HN)

PROFESSIONAL MEMBERSHIPS AND SERVICES

- 2019 - present **Peer Reviewer:** *International Journal of Multiphase Flow* and *Experimental Thermal and Fluid Science*
- 2016 - 2019 **Member,** American Physical Society
- 2017 - 2018 **Seminar Coordinator,** The Bob and Norma Street Environmental Fluid Mechanics Laboratory, Stanford University

AWARDS AND HONORS

- 2015 **Environmental Engineering Achievement Award,** Colorado State University
- 2015 **Graduate with Distinction, 1st place in the department,** Colorado State University
- 2013 - 2015 **Dean's Lists (five times),** Colorado State University
- 2012 - 2015 **Colorado State University Scholarship (total amount: \$24,000),** Colorado State University
- 2012 - 2014 **Coca-Cola Water Scholars Program, Coca-Cola full scholarship (total amount: \$50,000),** Colorado State University

COMPUTER SKILLS

- Advanced C++ (with CUDA, OpenMP, MPI project experiences), MATLAB, Python, R
- Intermediate JAVA, ArcGIS, HEC-RAS, ANSYS Fluent, AutoCAD, Julia

SOCIAL SERVICES

- 2018 - 2019 **Co-President,** Stanford Christian Students Club, Stanford University
- 2017 - 2019 **Coordinator and Volunteer,** Stanford New International Student Airport Pick up Program, Stanford University and The Church in Mountain View
- 2012 - 2013 **Officer,** Association of Chinese Students and Scholars Colorado State University, Colorado State University