FENG LING

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PERSONAL INFO

Birth Year: 1992
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EDUCATION

2016 - **University of Southern California**, Los Angeles, CA
Ph.D. Candidate, Mechanical Engineering *(Qualifying Exam 05/09/2018)*

2010 - 2015 **The University of Texas at Austin**, Austin, TX
B.S. Pure Mathematics, December 2015
B.S. Aerospace Engineering (Astronautics), December 2015
Computational Science and Engineering Certificate Program, May 2015
Halliburton Business Foundations Summer Institute, July 2012

EMPLOYMENT

2017 - **Research Assistant**, Bio-Inspired Motion Lab at USC, PI: *Prof. Eva Kanso*
2016 **Teaching Assistant**, Engineering Thermodynamics (AME 310), *Prof. J. Domaradzki and A. Penkova*
2013 - 2015 **Research Assistant**, Center for Space Research at UT Austin, PI: *Prof. Srinivas Bettadpur*

HONOR/AWARDS

2015 **Meritorious Winner** Team Lead, COMAP Mathematical Contest In Modeling
Problem B: Searching a lost aeroplane in open water, locally organized by *Dr. Andrew Spann*
2011 **Member**, ΣΓΤ Aerospace Honor Society UT Austin Chapter
2010 **Finalist**, Intel International Science and Engineering Fair

PUBLICATIONS

2019
4. Ling, F., Y. Man, and E. Kanso, Reversal of Flagellar Wave Propagation Is Controlled by Proximal to Distal Asymmetry in Molecular Motor Dynamics, (in preparation)
3. Ling, F., K. Katija, D. Stein, M. Shelley, J. Nawroth, and E. Kanso, Morphological Diversity of Ciliated Epithelia Correlate with Flow Function, (in preparation)
2. Ling, F., Y. Man, and E. Kanso, Cilia Oscillations, *Philosophical Transactions B*, (under review)

2018
1. Ling, F., H. Guo, and E. Kanso, Instability-driven oscillations of elastic microfilaments, *J. R. Soc. Interface 15:20180594*.

RESEARCH EXPERIENCE

2017 - **Active Microfilaments**, supervised by *Prof. Eva Kanso*
Understanding the role of buckling instabilities and active forces on mechanics of cilia beating
Using porous media models to analyze bulk characteristics of ciliary pumps

2018 **Trade-offs in Rapid Plant Movements**, supervised by *Prof. Orit Peleg* and *Dr. Mattia Serra*
MSRI-Janelia Summer Graduate School on Mathematical Analysis of Behavior *(06/17-06/30)*
Used beam theory and optimization techniques to study how *Mimosa Pudica* reduces wind drag by folding

2016 - **2D Discrete Inverse Spectral Problem**, supervised by *Prof. Etienne Vouga* and *Prof. Keenan Crane*
Reconstructed discrete 2D genus 0 surfaces using only its Laplace-Beltrami spectrum

2013 - 2015 **At Center for Space Research**, supervised by *Prof. Srinivas Bettadpur*
Parametric study of different misalignment models between spacecraft accelerometer and center of mass
Coding assists for GRACE spacecraft thermal environment modeling
Analyzed correlations between accelerometer reading, thruster firing pattern, and star camera anomalies
Studied geographical significance of GRACE on-board SNR w.r.t. post-fit residue of gravity model

TALKS/PRESENTATIONS

2019 **APS Division of Fluid Dynamics Meeting**, Reversal of Flagellar Wave Propagation Is Controlled by Proximal to Distal Asymmetry in Molecular Motor Dynamics
SHINE USC, Experiments on the Fantastic Strangeness of Viscosity and Elasticity

2018 **APS Division of Fluid Dynamics Meeting**, Ciliary Pumps
APS March Meeting, Instability-driven Oscillations of Active Microfilament

2017 **APS Division of Fluid Dynamics Meeting**, Dynamics of Active Microfilaments
2016 **Mathematics Undergraduate Student Talks**, LS Category and its Cousins
2015 **Directed Reading Program**, (Co)fiber Sequences and $\pi_3(S^2)$, mentor: *Ernest Fontes*
Directed Reading Program, What is Persistent Homology, mentor: *Ahmad Issa*
2014 **Directed Reading Program**, Čech Cohomology of Projective Spaces, mentor: *Yuecheng Zhu*
Directed Reading Program, Classification of Du-val Singularities, mentor: *Yuecheng Zhu*
2013 **Directed Reading Program**, How to Blow-up Double Points in a Plane, mentor: *Hendrik Orem*

GRADUATE COURSEWORK

at University of Southern California
2018 Transition to Chaos in Dynamical Systems, *Prof. Paul Newton*
Mechanics of Locomotion in Air, Water, and on Land, *Prof. Eva Kanso*
2017 Thermodynamics and Statistical Mechanics, *Prof. Christoph Haselwandter*
Incompressible Fluids and Turbulence, *Prof. Mitul Luhar*
2016 Fokas method (audit), *Prof. Athanassios Fokas*
at the University of Texas at Austin
Kac-Moody Algebras and Groups (audit), *Prof. Daniel Allcock*
Algebraic Geometry (audit), *Prof. David Ben-Zvi*
Riemann Surfaces (audit), *Prof. Tim Perutz*
Moduli of Higgs Bundle (audit), *Prof. Andrew Neitzke*
2015 Algebra, *Prof. Felipe Voloch*
K-theory as it appears in geometry, *Prof. Dan Freed*
4-Manifold Topology (audit), *Prof. Robert Gompf*
Rational Homotopy Theory (audit), *Dr Jonathan Campbell*
Differential Topology, *Prof. Andrew Neitzke*
D-modules (audit), *Dr Sam Gunningham*
Ergodic Theory and Dynamics (audit), *Prof. Lewis Bowen*
2014 Real Analysis, *Prof. Lewis Bowen*
Algebraic Topology, *Prof. Michael Starbird*
Homotopy Type Theory (audit), *Prof. Andrew Blumberg*
Complex Analysis, *Prof. Thomas Chen*
Stochastic Detection and Estimation, *Prof. Todd Humphreys*
2013 Finite Elements Methods, *Prof. Mary Wheeler*
GPS Signal Processing, *Prof. Todd Humphreys*

MISC. ASSOCIATIONS

2019 Judging for USC Undergraduate Symposium for Scholarly and Creative Work
2018 - Designated pot washer for Good Karma Cafe at USC (volunteer)
2017 USC Wrigley Marine Science Institute Spring Break Program on Sustainability
2016 - DTLA Weightlifting at Trojan Athletics
2016 Volunteering for SXSW comedy and planning operations crew
2015 Volunteer at Introduce a Girl to Engineering Day (Ballon rockets and iterative engineering design)
2014 - 2016 Participant of Texas Undergraduate Topology and Geometry conference
2013 - 2016 Active member of Math Club at UT Austin (should've bought a shirt)
2011 - 2016 Coursera, Udacity, and other MOOCs in Cryptography, Software Testing, Machine Learning, Database Management, AI, Automata Theory, Epigenetic Control of Gene Expression...
2011 - 2014 Longhorn Rocket Association (model rockets and software ground station work for a L2 rocket)
2010 - 2011 Member of Engineering for a Sustainable World, Robotics and Automation Society at UT Austin; Explore UT Guide; Austin Habitat for Humanity (helped roofed and fenced a house)
2007 - 2009 Volunteer work at Houston Methodist Hospital and Bellaire City Library