CONTACT INFORMATION:

PHONE: 414-241-2491
EMAIL: pjfolz@ucsd.edu

EDUCATION:

UNIVERSITY OF CALIFORNIA SAN DIEGO (UC SAN DIEGO)
Ph.D., Engineering Sciences (Aerospace Engineering), 2023
M.S., Engineering Sciences (Aerospace Engineering), 2011

ILLINOIS INSTITUTE OF TECHNOLOGY
B.S. Aerospace Engineering, Cum Laude, 2008

RESEARCH INTERESTS:

Vortex interactions; Turbulence; Fundamental fluid dynamics; Computational fluid dynamics; Geophysical flows; Aerodynamics

DISSERTATION:

TITLE: Investigation of asymmetric vortex pair interactions
ADVISOR: Keiko K. Nomura

PUBLICATIONS:

1. Patrick J. R. Folz and Keiko K. Nomura, 2023, "On asymmetric vortex pair interactions in shear," *Journal of Fluid Mechanics*, **969**, A21. doi: 0.1017/jfm.2023.525
2. Patrick J. R. Folz and Keiko K. Nomura, 2017, "A quantitative assessment of viscous asymmetric vortex pair interactions," *Journal of Fluid Mechanics*, **829**, 1-30. doi: 10.1017/jfm.2017.527
3. Patrick J. R. Folz and Keiko K. Nomura, 2014, "Interaction of Two Equal Co-Rotating Viscous Vortices in the Presence of Background Shear*," Fluid Dynamics Research*, **46**, 3, 031423. doi: 10.1088/0169-5983/46/3/031423

COURSES TAUGHT:

1. UC SAN DIEGO, MAE DEPARTMENT:
    a. MAE 101B Advanced Fluid Mechanics, Summer 2017
    b. MAE 110A Thermodynamics, Summer 2014

WORK EXPERIENCE

1. Researcher, Nomura Group, UC San Diego, 2009-2023
2. Intern, NASA Glenn Research Center, Summer 2007, Summer 2008
3. Thermal Analyst, AggieSat Lab (Undergraduate Summer Research Grant), Texas A&M University, Summer 2006

PRESENTATIONS:

1. Patrick J. Folz, *Dynamics and deformation of interacting vortices in backgrou\ shear*, 73rd Meeting of the APS Division of Fluid Dynamics, Online, 2020
2. Patrick J. Folz, *Dynamics and deformation of a vortex during pairing under the influence of external shear*, APS March Meeting, Online (orig. Denver, CO), 2020

3. Patrick J. Folz and Keiko K. Nomura, *The influence of background shear on asymmetric vortex interactions*, 70th Meeting of the APS Division of Fluid Dynamics, Denver, CO, 2017
4. Patrick J. Folz and Keiko K. Nomura, *A Quantitative Assessment of Asymmetric Vortex Interactions in Viscous Flow*, 68th Meeting of the APS Division of Fluid Dynamics, Boston, MA, 2015
5. Patrick J. Folz and Keiko K. Nomura, *Interaction regimes of unequal vortex pairs in the presence of external shear*, 67th Meeting of the APS Division of Fluid Dynamics, San Francisco, CA, 2014
6. Patrick J. Folz and Keiko K. Nomura, *Interactions of two unequal co-rotating viscous vortices in the presence of external shear*, 8th Southern California Flow Physics Symposium, Los Angeles, CA, 2014
7. Patrick J. Folz and Keiko K. Nomura, *Interactions of two unequal co-rotating viscous vortices in the presence of external shear*, 66th Meeting of the APS Division of Fluid Dynamics, Pittsburgh, PA, 2013
8. Patrick J. Folz and Keiko K. Nomura, *Asymmetric Vortex Interactions in the Presence of Background Shear*, IUTAM Symposium on Vortex dynamics: formation, structure and function, Fukuoka, Japan, 2013 (short presentation)
9. Patrick J. Folz and Keiko K. Nomura, *Investigation of the critical strain rate parameter for co-rotating vortex pairs*, 64th Annual Meeting of the APS Division of Fluid Dynamics, Baltimore, MD, 2011

POSTERS:

1. Scott Carlson, Patrick J. Folz and Keiko K. Nomura, *Vortex Interactions in Two-Dimensional Turbulence*, IUTAM Symposium on Vortex dynamics in science, nature and technology, San Diego, California, U.S.A., 2019
2. Patrick J. Folz and Keiko K. Nomura, *Asymmetric Vortex Interactions in the Presence of Background Shear*, Research Expo, Jacobs School of Engineering, UC San Diego, San Diego, CA, 2014
3. Patrick J. Folz and Keiko K. Nomura, *Asymmetric Vortex Interactions in the Presence of Background Shear*, IUTAM Symposium on Vortex dynamics: formation, structure and function, Fukuoka, Japan, 2013

HONORS AND AWARDS:

1. Summer Graduate Teaching Scholar, UC San Diego, 2014

SCHOLARLY ACTIVITY

1. Reviewer, Journal of Fluids Engineering, ASME

PROFESSIONAL AND HONORARY SOCIETIES:

1. American Physical Society
2. American Society for Engineering Education
3. Tau Beta Pi
4. American Institute of Aeronautics and Astronautics
5. American Association for the Advancement of Science

PROFESSIONAL DEVELOPMENT

1. A Hands-on Introduction to Engineering Simulations (CornellX), online, May 2024
2. ASEE Presents: Master Class on Effective Teaching, online, May 2022
3. 2020 Assessment Institute, IUPUI, online conference, Oct. 2020
4. Engaging Students through High-Impact Practices, CIRTL, webinar series, Fall 2020
5. Reducing Math Anxiety Among Your Students, CIRTL, online, Oct. 2020
6. National Effective Teaching Institute – 3 (NETI-3), ASEE, online, Sep. 2020
7. ASEE Virtual Conference, ASEE, online, Jun. 2020
8. Career Advancement: Tips for managing others, UC San Diego Alumni Network, webinar, Apr. 2020
9. Going Online? Applying Evidenced-Based and Inclusive Practices to the Online Synchronous Classroom workshop, CIRTL, online, Mar. 2020
10. Lessons Learned In the Major Professor-Graduate Student Relationship: A Conversation roundtable, CIRTL, online, Jan. 2020
11. Using Qualitative Methods to Enrich Teaching and Learning workshop, CIRTL, online, Sept. 2019
12. *How People Learn* Reading Group, CIRTL, online, Spring-Summer 2019
13. Teaching with Technology seminar, CIRTL, online, Winter 2019
14. Getting Ready to Teach in the American Classroom seminar, CIRTL, online, Winter 2019
15. Introduction to Teaching at a Community College seminar, CIRTL, online, Winter 2019
16. Addressing Implicit Bias in STEM seminar series, CIRTL, online, Fall 2018
17. Problem-Based Learning Classic, CIRTL Summer Institute, University of Delaware, May 2018
18. Diversity in the College Classroom MOOC, CIRTL, online, Spring 2018
19. Creating Assessments for the STEM Classroom MOOC, CIRTL, online, Fall 2017
20. Advancing Learning Through Evidence-Based STEM Teaching MOOC, CIRTL (certificate with distinction, online, Fall 2016
21. The College Classroom, Center for Teaching Development, UC San Diego, Fall 2013

TEACHING ASSISTANT EXPERIENCE:

1. TEACHING ASSISTANT, MAE DEPARTMENT, UC SAN DIEGO, 2010-2015:
    a. MAE 101A Introductory Fluid Mechanics
    b. MAE 101B Advanced Fluid Mechanics
    c. MAE 110A Thermodynamics
    d. MAE 180A, Spacecraft Guidance 1

MENTORING EXPERIENCE

1. MENTOR, NOMURA GROUP, UC SAN DIEGO, 2014-2021:
    a. Graduate and Undergraduate student researchers and their projects
2. JACOBS UNDERGRADUATE MENTORING PROGRAM, UC SAN DIEGO, 2011-2014
3. ENGLISH-IN-ACTION TUTOR, UC SAN DIEGO, 2014-2015
4. CONVERSATION PARTNER, UC SAN DIEGO Extension, 2012-2016

COMPUTER SKILLS:

1. Programming Languages: MATLAB, FORTRAN, C/C++, CUDA/MPI, Python

2. Operating Systems: Microsoft Windows, Linux (Ubuntu, CentOS)
3. Other Software: Microsoft Office Suite, LaTeX (and MiKTeX), Windows PowerShell, GIMP, Inkscape, ROMS, OpenFOAM, ParaView, Ansys suite (FLUENT, Mechanical, Discovery, SpaceClaim, Workbench, etc.)

SPOKEN LANGUAGES:

1. Spoken: English (Native), Spanish (Basic), Japanese (Basic)