SCOTT A. WIELAND

Scott.Wieland@colorado.edu
215-435-0313
Department of Mechanical Engineering
University of Colorado, Boulder
Boulder, CO 80309-0427

EDUCATION

Doctorate of Philosophy in Mechanical Engineering Expected Aug. 2017
University of Colorado Boulder
Advisor: Peter Hamlington
Thesis: "Direct Numerical Simulations of Compressible Rayleigh Taylor Instabilities Through the Adaptive Wavelet Collocation Method"
GPA: 3.9/4.0

Bachelor of Science in Physics May 2012
Mansfield University of Pennsylvania
Minors: Philosophy and Mathematics
Graduated: Magna Cum Laude
GPA: 3.9/4.0

RESEARCH INTERESTS

Exploring complex flows, i.e. turbulent, compressible, variable density, reacting, etc., through the use of computational fluid dynamics and novel numerical schemes.

RESEARCH EXPERIENCE

Research Assistant Boulder, CO
University of Colorado Boulder Aug. 2014 – Present
Member of both the Turbulence and Energy Systems Laboratory and the Multiscale Modelling and Simulations Laboratory
Worked with novel numerical schemes to perform high fidelity simulations of turbulent and variable density flows
Improved and expanded an in-house fluid simulation code base to more efficiently and accurately capture complex flows

Summer Graduate Research Assistant Los Alamos, NM
Los Alamos National Laboratory June 2014 – August 2016
Perform high resolution fluid simulations using High Performance Computing Platforms
Investigate scaling and efficiency of complex and highly adaptive fluid solvers
Present research and findings to other students and members of the laboratory

SCOTT A. WIELAND

TEACHING EXPERIENCE

Teaching Assistant for Turbulence Boulder, CO
University of Colorado Boulder Jan. 2017 - Present
Work with the professor to offer any assistance necessary for the student's success
Fill in for the professor as needed to ensure proper conveyance of information
Grade and return assignments in a timely and informative fashion

Teaching Assistant for Engineering Methods II Boulder, CO
University of Colorado Boulder Jan. 2017 - Present
Create and hold lectures as needed
Hold office hours to offer students further assistance
Remain available for easy contact to answer questions

Teaching Assistant for Measurements Lab I&II Boulder, CO
University of Colorado Boulder Aug. 2013 – May 2014
Manage approximately 30 teams of 4 students as they perform unique experiments
Encourage students to think critically and assist them in problem solving
Teach students about proper statistical analysis techniques and software

Physics and Math Tutor Mansfield, PA
Mansfield University Learning Center Jan. 2010 – Jan. 2012
Supplement class material on both an individual and group basis
Creatively adapt teaching styles to fit the needs of the current student(s)
Maintain an in depth working knowledge of all subjects to be prepared to assist from a vast catalog of classes

PUBLICATIONS

Wieland, S. A., Reckinger, S. J., Hamlington, P. H., and Livescu, D., "Single Mode Studies of Isothermal Compressible Rayleigh Taylor Instabilities," Manuscript in Preparation.

Wieland, S. A., Reckinger, S. J., Hamlington, P. H., and Livescu, D., "Effects of Background Stratification on the Compressible Rayleigh Taylor Instability," *Proceedings of the AIAA Aviation and Aeronautics Forum and Exposition*, Manuscript in Preparation.

Souopgui, I., **Wieland, S. A.**, Yousuff Hussaini, M., and Vasilyev, O. V., "Space–time adaptive approach to variational data assimilation using wavelets," *Journal of Computational Physics*, vol. 306, 2016, pp. 253–268.

PRESENTATIONS

Wieland, S. A., Reckinger, S. J., Hamlington, P. H., and Livescu, D., "Effects of Background Stratification on the Compressible Rayleigh Taylor Instability," *AIAA Aviation and Aeronautics Forum and Exposition*, Denver, Colorado: The American Institute of Aeronautics and Astronautics, 2017.

Wieland, S. A., Livescu, D., Vasilyev, O. V., and Reckinger, S. J., "Vortical Effects on the Compressible Rayleigh-Taylor Instability," *69th Annual Meeting of the APS Division of Fluid Dynamics*, American Physical Society, 2016.

Wieland, S. A., "Implications of Background Stratification on the Compressible Rayleigh Taylor Instability," *Boulder Fluid and Thermal Sciences Seminar*, Boulder, Colorado: 2016.

Wieland, S. A., Livescu, D., Vasilyev, O. V., and Reckinger, S. J., "The Vorticity Equation and the Compressible Rayleigh-Taylor Instability," *Rocky Mountain Fluid Mechanics Research Symposium 2016*, Boulder, Colorado: University of Colorado, Boulder, 2016.

Wieland, S. A., "The Vorticity Equation and the Compressible Rayleigh-Taylor Instability," *CCS-2 Tech Talk*, Los Alamos, New Mexico: Los Alamos National Laboratory, 2016.

Wieland, S. A., Livescu, D., Vasilyev, O. V., and Reckinger, S. J., "The Compressible Rayleigh-Taylor Instability and Vortex Dynamics in Stratified Media," *68th Annual Meeting of the APS Division of Fluid Dynamics*, Boston, Massachusetts: American Physical Society, 2015.

Wieland, S. A., and Vasilyev, O. V., "Direct Numerical Simulations of Compressible Rayleigh Taylor Instabilities through the Adaptive Wavelet Collocation Method," *Graduate Engineering Annual Research & Recruitment Symposium*, Boulder, Colorado: 2015.

AWARDS AND HONORS

Outstanding Mechanical Engineering Research Potential Fellowship	Aug. 2013
Outstanding Senior in Chemistry and Physics	May 2012
Vayansky Physics Scholarship	Nov. 2011
Academic Achievement in Physics	Sept. 2011
Michael Vayansky Scholarship	Aug. 2011
President's List	Dec. 2010 and May 2011
Dean's List	Dec. 2008, May 2009, Dec. 2009, May 2010, and May 2011
Board of Governors Scholarship	Aug. 2008, 2009, 2010, and 2011

ACTIVITIES AND ORGANIZATIONS

American Institute of Aeronautics and Aviation	Oct. 2016 - Present
American Physical Society	July 2015 – Present
Hop Barley and the Alers Homebrew Club *Vice President*	May 2015 - Present

Order of Omega Oct. 2010 – May 2012
Treasurer

Student Alumni Ambassadors Jan. 2010 – May 2012

Frisbee Team Oct. 2008 – May 2012
Vice President

Alpha Kappa Lambda Fraternity Sept. 2008 – May 2012
Founding Father
Vice President
Chartering Member
Judicial Board Member
Treasurer

Physics Club Sept. 2008 – May 2010
President

Mansfield University Marching Band Aug. 2008 – Jan. 2010

SOFTWARE AND SKILLS

Coding Languages: FORTRAN, MATLAB, C, Python
Data Visualization: Paraview, MATLAB, ENSIGHT, Matplotlib
Fluid Flow: PAWCM, OpenFOAM
Other Software: Linux, LaTeX, Excel, LabVIEW, Batch Scripting
Skills: Time management
Group leader
Numerical algorithm knowledge
Turbulence model implementation
Critical thinking
Communication
Self-motivation
Driven
Organization
Quick learner