

Dr. T. Everett Ellis

CONTACT INFORMATION	525 Madison Pl SE Albuquerque, NM 87108	Phone: +1-512-814-8304 Email: t.everett.ellis@gmail.com
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SUMMARY OF QUALIFICATIONS	Computational scientist with a background in aerospace engineering and an emphasis on fluid dynamics and shock physics. Exposure to a variety of simulation domains including solid mechanics, wave propagation, electromagnetics, heat transfer, and plasma physics. Experience running commercial CFD solvers as well as developing research codes for a wide range of flow domains. Well developed programming and development skills with an affinity for clean, elegant solutions. Comfortable with both spoken and written communication skills with a keen interest in project management and team dynamics.
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PROFESSIONAL EXPERIENCE	<p>Postdoctoral Scientist – <i>Plasma Physics</i> 2016 to present Electromagnetic Theory Group, Sandia National Laboratory</p> <ul style="list-style-type: none">• Took leadership of project management roles including running code review meetings and developing a hybrid Scrum/Kanban agile development process.• Attended seminars, workshops, and classes on leadership, project management, and communication.• Performed electromagnetic simulations of radar cross-sections using commercial and research software as part of a code verification study.• Developed a highly scalable plasma physics code using the Trilinos Project.• Contributed to a test harness for stochastic simulation codes using a new theory of stochastic Richardson extrapolation implemented in Python.• Involvement with experimental studies of electromagnetic pulses and analysis of data collected. <p>Graduate Research Assistant – <i>Stabilized Finite Elements</i> 2010 to 2016 Institute for Computational Engineering and Sciences, University of Texas at Austin</p> <ul style="list-style-type: none">• Organized and lead group meetings.• Frequently presented research at national and international meetings.• Developed space-time discontinuous Petrov-Galerkin finite element methods for fluid flow applications.• Implemented a conservative formulation of DPG through Lagrange multipliers.• Contributed significantly to Camellia, a parallel C++ library built on Trilinos for rapid development of DPG formulations. <p>Graduate Student Researcher – <i>Shock Hydrocodes</i> 2008 to 2013 Institute for Scientific Computing Research, Lawrence Livermore National Laboratory</p> <ul style="list-style-type: none">• Took initiative in developing new features and research directions.• Worked in a small research group developing advanced finite element discretization methods for Lagrangian hydrodynamics.• Improved staggered grid hydro algorithms in multi-material Arbitrary Lagrangian Eulerian codes.• Prototyped code in Matlab to explore the benefits of high order finite elements.• Extended the C++ shock physics code Blast to axisymmetric problems.• Developed a Python-scriptable plotting tool to interface with Blast.• Implemented a smoothness indicator to isolate artificial viscosity to shocked and underresolved flow regions.• Contributed to open source MFEM finite element library.
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	<p>Undergraduate Student Researcher – Shock Tube Experiments Summer 2007 Research Experience for Undergraduates, Aerospace Engineering, University of Illinois at Urbana-Champaign</p> <ul style="list-style-type: none"> • <i>Compressible Flows in Geological Applications</i> - Designed a series of experiments and set up a lab to study the Mount St. Helens lateral blast. 	
EDUCATION	<p>The University of Texas, Austin</p> <p>Ph.D. Computational Science Engineering and Mathematics, April 2016</p> <ul style="list-style-type: none"> • Thesis Topic: <i>Space-time Discontinuous Petrov-Galerkin Finite Elements for Transient Computational Fluid Dynamics</i> • Advisors: Leszek Demkowicz, Robert Moser <p>GPA: 3.92</p> <p>California Polytechnic State University, San Luis Obispo</p> <p>M.S. Aerospace Engineering, June 2010</p> <ul style="list-style-type: none"> • Thesis Topic: <i>High Order Finite Elements for Lagrangian Computational Fluid Dynamics</i> • Advisors: Tzanio Kolev, Robert Rieben, Faysal Kolkailah • <i>Summa cum Laude</i>, With Highest Honors in Engineering <p>B.S. Aerospace Engineering, June 2010</p> <ul style="list-style-type: none"> • Aeronautics specialization • <i>Summa cum Laude</i>, With Highest Honors in Engineering <p>GPA: 3.93</p>	
REFEREED JOURNAL PUBLICATIONS	<p>T.E. Ellis, J. Chan, and L. Demkowicz (2016), Robust DPG Methods for Transient Convection-Diffusion. <i>Lecture Notes in Computational Science and Engineering</i>, doi:10.1007/978-3-319-41640-3.6</p> <p>T.E. Ellis, and L. Demkowicz (2014), Locally Conservative Discontinuous Petrov-Galerkin Finite Elements for Fluid Problems. <i>Computers & Mathematics with Applications</i>, doi:10.1016/j.camwa.2014.07.005</p> <p>V. Dobrev, T.E. Ellis, Tz. Kolev and R. Rieben (2012), High-order Curvilinear Finite Elements for Axisymmetric Lagrangian Hydrodynamics. <i>Computers & Fluids</i>, doi:10.1016/j.compfluid.2012.06.004</p> <p>V. Dobrev, T.E. Ellis, Tz. Kolev and R. Rieben (2011), Curvilinear Finite Elements for Lagrangian Hydrodynamics. <i>International Journal for Numerical Methods in Fluids</i>, doi:10.1002/fld.2366</p>	
SOFTWARE SKILLS	<p>Computer Programming:</p> <ul style="list-style-type: none"> • C++, Python, Lua, MATLAB, Mathematica, and others <p>Scientific Computing Libraries:</p> <ul style="list-style-type: none"> • Trilinos, FEniCS, libMesh, MFEM, NumPy, SciPy, and others <p>CFD / Engineering Software:</p> <ul style="list-style-type: none"> • Fluent, Gambit, SolidWorks, Pro/ENGINEER, and others 	

SELECTED
CONFERENCES
AND WORKSHOPS

- NM EPSCoR Post-Doc Leadership Workshop,
January 2017 – La Joya, NM
- Minimum Residual and Least Squares Finite Element Methods Workshop,
November 2015 – Delft, The Netherlands
- Minimum Residual and Least Squares Finite Element Methods Workshop,
November 2013 – Austin, TX
- Advanced Numerical Methods in the Mathematical Sciences,
May 2015 – College Station, TX
- Parallel CFD, May 2014 – Trondheim, Norway
- MultiMaterial Hydrodynamics Conference, September 2013 – San Francisco, CA
- U.S. National Congress on Computational Mechanics, July 2015 – San Diego, CA
- U.S. National Congress on Computational Mechanics, July 2013 – Raleigh, NC
- U.S. National Congress on Computational Mechanics, July 2011 – Minneapolis, MN
- Finite Element Rodeo, February 2016 – College Station, TX
- Finite Element Rodeo, February 2015 – Dallas, TX
- Finite Element Rodeo, February 2014 – Austin, TX
- Finite Element Rodeo, February 2013 – Baton Rouge, LA
- Conference on Analysis of Partial Differential Equations,
December 2013 – Lake Buena Vista, FL

AWARDS

- Computational Applied Math Fellow – University of Texas
- Graduated *Summa cum Laude* – Cal Poly
- President’s Honors List – Cal Poly 2005 - 2007
- Dean’s List – Cal Poly 2005 - 2008
- Litton Industries in Engineering Scholarship – Cal Poly 2007 - 2008
- Accenture Outstanding AERO Award – Cal Poly 2007
- Reinhold Aerospace Engineering Scholarship – Cal Poly 2007

RESEARCH
INTERESTS

Computational fluid dynamics, shock physics, multi-phase flows, turbulence modeling, finite element methods, Lagrangian hydrocodes, computational plasma dynamics, magnetohydrodynamics, computational mechanics