LOUIE JOSEPH LONG

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EDUCATION

University of Colorado Boulder ***Degrees awarded May 2016***
Bachelor of Science in Engineering Physics Cumulative GPA: 3.436
Bachelor of Science in Applied Mathematics

RESEARCH EXPERIENCE

University of Colorado Boulder *Sep. 2014 - May 2016*

- High Performance Simulations and Modeling in the Mathematical Geosciences REU
  - Advisors: Professor Keith Julien and Professor Michael Calkins
  - Assisting in development of mathematical models used to understand fluid dynamical regimes that are not accessible to direct numerical simulations of the full governing equations of fluid dynamics
  - Learning and understanding fluid simulation, visualization, and analysis techniques in the context of large-scale computing
  - Testing and analyzing numerical solutions of asymptotically reduced systems of equations
  - Presented research at both the 2015 and 2016 SIAM Front Range Student Conference

Projects

- Julien *et al.* (2013) "Quasi-geostrophic convection in a rotating cylindrical annulus with sloping endwalls" *J. Fluid Mech., vol. 732, pp. 214 - 244*
  - Visualized fluid flow with VAPOR Visualization and Analysis Platform
  - Tested code and advanced understanding of mathematical model with simulations by JANUS Supercomputer
  - Follow-up work to Julien *et al.* (2013); no publication
- Michael A. Calkins, **Louie Long**, David Nieves, Keith Julien, Steven M. Tobias (2016) "Low magnetic Prandtl number kinematic dynamos driven by quasi-geostrophic convection" *Preprint submitted to Phys. Earth Planet. Int. June 1, 2016*
  - Studied the onset of convection-driven kinematic dynamo action by means of computer simulations, visualization techniques, and mathematical analysis
  - Co-author in publication currently under review for *Physical Review Fluids*

SKILLS

- **Technical:** Mathematica, MATLAB, UNIX/LINUX operating systems, VAPOR Visualization and Analysis Platform
  - Proficient in LaTeX and Microsoft Office
  - Competent in: Python, Bash, Vim, Unix Scripting

TEACHING EXPERIENCE

University of Colorado Boulder

- **Learning Assistant** for Calculus 1 & Matrix Methods *Aug. 2012 - June 2015*
  - Provided leadership and developed academic involvement in classroom environment
  - Mentored and tutored students through academic office hours
  - Graded class assignments and examinations
- **Teaching Assistant** for Introductory Physics *Nov. 2013 - Dec. 2014*
  - Provided leadership and developed academic involvement in classroom and laboratory environments
  - Mentored and tutored students through academic office hours
  - Graded class assignments and examinations

WORK EXPERIENCE

University of Colorado Boulder

- **Resident Advisor** in Andrews Hall Residential College *March 2013 - May 2014*
  - Provided leadership and developed community involvement for a community of 17-20 residents
  - Coordinated events with professional and student staff for 10-250 residents around education, involvement, diversity, social justice and sustainability
  - Collaborated with staff to conduct community walks, responded to crisis situations and developed the larger community
- **Community Assistant** *May 2013 - Aug. 2013*
  - Provided leadership and developed community involvement for summer conferences
  - Front desk and clerk operations

Pueblo, Colorado

- **Associates for Psychotherapy and Education P.C.** *Jan. 2011 - Aug. 2012*
  - Filing, faxing, scheduling, & organizing in an office environment
  - Front desk & clerk operations

MENTORING

University of Colorado Boulder

- **GoldShirt & Engineering Honors Program Mentor** in Andrews Hall Residential College *Sep. 2012 - May 2014*

- **Recitation Leader** for *EHON 1151* in Andrews Hall Residential College *Sep. 2012 - Dec. 2013*
- **GoldShirt Program Resident Advisor and Teaching Assistant** *June 2012*

HONORS, AWARDS, & ACTIVITIES

- Attended the 2015 RMACC (Rocky Mountain Advanced Computing Consortium) High Performance Computing Symposium
- Attended and presented at the 2015 and 2016 SIAM (Society for Industrial & Applied Mathematics) Front Range Student Conferences
- 5-year GoldShirt Engineering Scholarship Program, Engineering Honors Program, Andrews Hall RAP Scholar
- Andrews Hall, GoldShirt, and Engineering Honors Program Leader and Mentor
- Habitat for Humanity Service, ReSource Yard Service, Volunteer at University Hill Elementary School

RELEVANT COURSEWORK

- Fourier Series & Boundary Value Problems; Complex Variables; Applied Analysis 1; Calculus 1, 2, 3, & 4; Scientific Computing in MATLAB; Intermediate Numerical Analysis; Differential Equations; Matrix Methods (Linear Algebra); Applied Probability; Mathematical Statistics; Discrete Applied Mathematics; Classical Mechanics 1 & 2; Electricity & Magnetism 1 & 2; Quantum Mechanics 1 & 2; Earth & Planetary Physics 1 (graduate level); Electronics for Physical Sciences; Thermodynamics & Statistical Mechanics; Introduction to Fluid Dynamics (graduate level); The Fluid Earth; Experimental Physics 1 & 2; Programming in C++; Data Structures (C++)