

## Spencer E. Olson

7345 Stream Way, Springfield, VA 22152  
Phone: (703) 541-8730, Office: (202) 404-3655

<http://www.umich.edu/~olsonse>  
olsonse@umich.edu

### EDUCATION

- 2006 Ph.D. in Physics  
University of Michigan, Ann Arbor, MI, USA  
Dissertation title: *Long High-Gradient Magnetic Atom guide and Progress Towards an Atom Laser*
- 2000 B.S. in Physics  
Brigham Young University, Provo, UT, USA

### RESEARCH

- National Research Council Research Associate* **Naval Research Laboratory**  
Washington, D.C, USA 2006–present
- JUN 2006 Blue-detuned all-optical traps, Faraday spectroscopy, and spin relaxation in blue-  
PRESENT detuned traps.  
Dr. Fredrik K. Fatemi
- JAN 2003 Optimized evaporative cooling in atom guides via gridless DSMC.  
PRESENT In collaboration with Assistant Professor Andrew J. Christlieb  
and Professor Georg Raithel
- Graduate Student Research Assistant* **University of Michigan**  
Ann Arbor, MI, USA 2002–2006
- 2002–2006 Designed and constructed apparatus towards creation of continuous-wave atom  
laser. Simulated steady-state evaporative cooling process.  
Professor Georg Raithel
- 2003–2006 Developed gridless direct simulation Monte Carlo method for particle dynamics.  
Assistant Professor Andrew J. Christlieb
- Research Assistant* **Brigham Young University**  
Provo, UT, USA 1997–2000
- 1999–2000 Designed and deposited first generation *Start Surface* for Neutral Particle De-  
tector of ASPERA-3 Instrument aboard the European Space Agency's Mars Ex-  
press Mission (<http://www.aspera-3.org/>).
- 1998–2000 Co-developed and used hybrid genetic/simplex algorithm to optimize thin-film  
(a)periodic multilayer surfaces.
- 1998 Developed and tested Extreme ultraviolet (XUV) polarimeter

- 1997–1999 Built test equipment for and tested multi-function mirrors for XUV (reflective at 304Å, anti-reflective at 584Å) for XUV Imager of MIDEX IMAGE mission (<http://image.gsfc.nasa.gov/>).
- Professor R. Steven Turley  
Professor David D. Allred
- TEACHING *Graduate Student Instructor* **University of Michigan**  
Ann Arbor, MI, USA
- SUMMER 2005 Assisted with *Michigan Math and Science Scholars: The Physics of Magic and the Magic of Physics*
- Professor Georg Raithel  
Professor Fred Becchetti
- 2000-2002 Taught lab sections of “Introduction to Electrodynamics” (PHYS 141) and “Introduction to Mechanics” (PHYS 241) courses.
- Supervisor: Dennis Allen
- Teaching Assistant* **Brigham Young University**  
Provo, UT, USA 1999
- 1999 Tutored students in physics tutorial lab.
- SUMMER 1999 Assisted with “Introduction to Electronics” (Physics 350).  
Supervisor: Associate Professor Bryan G. Peterson
- Computer Instructor* **Stevens-Henager College**  
Provo, UT, USA 1998  
Taught introductory courses for UNIX/Linux, HTML, and Visual Basic.  
Co-taught introductory computer hardware course.

- PUBLISHED PAPERS S. E. Olson and A. J. Christlieb, *Gridless DSMC*, J. Comp. Phys., doi:10.1016/j.jcp.2008.04.038 (2008).
- S. E. Olson, M. L. Terraciano, M. Bashkansky, Z. Dutton, and F. K. Fatemi, *Cold atom confinement in an all-optical dark ring trap*, Phys. Rev. A, Rapid Comm. **76**, 061404 (2007).
- M. L. Terraciano, S. E. Olson, M. Bashkansky, Z. Dutton, and F. K. Fatemi, *Magnetically controlled velocity selection in a cold atom sample using stimulated Raman transitions*, Phys. Rev. A **76**, 053421 (2007).
- F. K. Fatemi, S. E. Olson, M. Bashkansky, Z. Dutton, and M. L. Terraciano, *Single-beam, dark toroidal optical traps for cold atoms*, In *SPIE 6483, Complex Light and Optical Forces*, San Jose, CA, March 2007.
- R. R. Mhaskar, S. E. Olson, and G. Raithel, *Open-channel fluorescence imaging of atoms in high-gradient magnetic fields*, Euro. Phys. J. D **41**, 221-227 (2007).
- S. E. Olson, R. R. Mhaskar, and G. Raithel, *Continuous propagation and energy filtering of a cold atomic beam in a long high-gradient magnetic atom guide*, Phys. Rev. A **73**, 033622 (2006).
- A. P. Povilus, S. E. Olson, R. R. Mhaskar, B. K. Teo, J. R. Guest, and G. Raithel, *Time averaging of multi-mode optical fiber output for a magneto-optical trap*, JOSA B **22**, 311 (2005).
- WORKING PAPERS S. E. Olson and A. J. Christlieb, *PID control of parallel processes*.
- S. E. Olson, G. Raithel, and A. J. Christlieb, *Pressure Driven Evaporative Cooling in Atom Guides*.
- POSTERS AND PRESENTATIONS S. E. Olson, M. L. Terraciano, M. Bashkansky, Z. Dutton, and F. K. Fatemi, *Single-beam, dark toroidal optical traps for cold atoms*, DAMOP, Calgary, Canada, May 2007.
- M. L. Terraciano, S. E. Olson, M. Bashkansky, Z. Dutton, and F. K. Fatemi, *Velocity-selective two-photon resonances in a cold atomic sample with large one-photon blue detunings*, DAMOP, Calgary, Canada, May 2007.
- S. E. Olson, R. R. Mhaskar, and G. Raithel, *Applications of cold, magnetically-guided atomic beams*, DAMOP, Knoxville, Tennessee, May 2006.
- R. R. Mhaskar, S. E. Olson, and G. Raithel, *Open-Channel fluorescence imaging of atoms in a high-gradient magnetic guide*, DAMOP, Knoxville, Tennessee, May 2006.

POSTERS AND PRESENTATIONS (CONT.) A. J. Christlieb, S. E. Olson, *Gridless DSMC using dynamic octrees*, Division of Plasma Physics Annual Meeting, Denver, Colorado, October 2005.

S. E. Olson, R. R. Mhaskar, and G. Raithel, *Continuous propagation of a cold  $^{87}\text{Rb}$  in a long, high-gradient magnetic atom guide*, DAMOP, Lincoln, Nebraska, May 2005.

J. Red, M. Bell, D. D. Allred, S. Lunt, R. S. Turley, S. E. Olson, M. B. Squires, *Building a Neutral Particle Detector for the ASPERA Mission* APS Four Corners Section Annual Meeting, Las Cruces, New Mexico, 2001.

S. E. Olson, R. S. Turley, and D. D. Allred, *Designs of Polarizers and Analyzers for an XUV/EUV Ellipsometer*, APS Four Corners Section Fall Meeting, Tucson, Arizona, 1998.

AWARDS AND HONORS

- National Academy of the Sciences, National Research Council Research Associateship, 2006–Present
- Brigham Young University Academic Scholarship, 1997-1999
- Glenn and Olive Nielson Scholarship, 1999-2000.
- Office of Research and Creative Activities Research Grant, 1998.
- Brigham Young University, College of Mathematics and Sciences Dean’s List, 1996-1998.

OTHER WORK

*Support Developer, Internship* **Novell, Inc.**  
*Worldwide Support Services*  
 Provo, UT, USA 2000-2005  
 Developed “Top Issues” tracking/reporting system.  
 Invented Novell Secure Rendezvous: seamless access to customer networks.  
 Supervisors: Carrie LaBonty, Mike Radford, David Crowther

SERVICE

*Full-time Missionary* **Church of Jesus Christ of Latter-Day Saints**  
 Sachsen/Thüringen, Germany 1994-1996  
 Served as voluntary (unpaid) full-time missionary.

SPECIAL SKILLS

- Languages: English (native), German
- Computer Skills: C, C++, Fortran 77, PHP, Perl, HTML, Java, Lab-View,  $\text{\LaTeX}$ , Linux (kernel + userspace), Maple, Matlab, Mathematica, MPI/Beowulf, Unix