

# Abraham J. Olson

Indianapolis, IN

(317) 664-6341 abraham.olson@gmail.com

---

- SUMMARY** Scientist with business know-how looking for a product engineering or R&D position
- RESEARCH** **Graduate Research Fellow (NSF/ NDSEG)** Aug. 2009 – Feb. 2015  
Department of Physics and Astronomy. Purdue University, West Lafayette, IN
- Led an experimental research group of 4 graduate students and >10 undergraduates which has made 4 scientific discoveries on the cutting edge of physics (producing 4+ papers); developed extensive modeling of physical systems in Matlab; built an apparatus with >350 mechanical, electrical, RF, and optical components (including solid-state diode lasers) that will be used by at least 3 others to obtain their PhD degrees.
  - Designed and programmed an Labview/Matlab code from ground up to interface 9+ different networked devices and allow future expansion. This code is used to run an apparatus continuously for >12 hours a day, and generates 1000 images each day of the coldest matter in the universe. As a result of this code, researchers have saved >2.1 hours a day for the past 3 years.
- BUSINESS** **TeloVISION, LLC**, West Lafayette, IN Sept. 2011 – Apr. 2012  
*Marketing and sales consultant for business plan development*
- Developed a marketing and business plan for a medical device start-up. Awarded top 10% out of 121 plans in Notre Dame business plan competition.
  - Pitched the business plan to angel investors; Resulted in material for website, marketing, and communication with future investors.
- One:Ten Communications**, South Bend, IN Sept. 2007 – July 2008  
*Project Manager*
- Facilitated communication between customer and design team on building 3 websites.
  - Maintained customer relations managing website maintenance and upgrades.
- LEADERSHIP** **The Company of the People of Praise**, South Bend, IN Aug. 2010 – Dec. 2013  
*Head of the Company, a young men's leadership development association*
- Led a multi-location association of 25-30 members in regular training and workshops.
  - Organized bi-annual conventions of 30+ attendees.
- EDUCATION** **Purdue University**, West Lafayette, IN Feb. 2015  
Doctor of Philosophy, Physics.
- University of Portland**, Portland, OR May 2007  
Bachelor of Science in Physics (Math minor), *Maxima Cum Laude*
- SKILLS** *Scientific:* experimental research (RF, electronic, optical), data analysis and modeling. Proficient with Matlab, Labview, LaTeX, OriginPro. Experience with Igor, Visual Basic for Applications, Mathematica, Python.  
*Business and Marketing:* market analysis (e.g. SWOT), print and digital media creation (Inkscape, Photoshop, Publisher), website design and construction, technical writing  
*Mentoring:* mentored 6+ undergraduates and 3 graduate student in research  
*Certifications:* NI LabVIEW Associate Developer (CLAD), Lead Management (Choice Theory)

Received the Dr. Warner Black Award (2014), Purdue University Physics Department:

"award will be given to a physicist that is most likely...to bring physics to the people and help them improve their lives by using a deep knowledge of fundamental and applied physics to make practical and useful inventions"

OTHER  
AWARDS

Lindau Nobel Laureate Meeting Young Researcher. Lindau, Germany. (One of 75 graduate students to represent the United States). 2012.  
National Science Foundation Graduate Research (NSF GRFP) Fellow, 2009.  
National Defense Science and Engineering Graduate (NDSEG) Fellow, 2009.  
Ross Fellowship at Purdue University, 2008-2009.

PUBLICATIONS

1. A.J. Olson, C.H. Li, D.B. Blasing, R.J. Niffenegger, Y.P. Chen, "Engineering an atom interferometer with modulated light-induced  $3\pi$  spin-orbit coupling" submitted (2015).
2. A.J. Olson, S.J. Wang, R.J. Niffenegger, C.H. Li, C.H. Greene, Y.P. Chen, "Tunable Landau-Zener transitions in a spin-orbit-coupled Bose-Einstein condensate". Phys. Rev. A 90, 013616 (2014).
3. A.J. Olson, D.L. Whitenack, and Y.P. Chen "Effects of magnetic dipole-dipole interactions in atomic Bose-Einstein condensates with tunable s-wave interactions", Phys. Rev. A 88, 043609 (2013).
4. A.J. Olson, R.J. Niffenegger, Y.P. Chen, "Optimizing the efficiency of evaporative cooling in optical dipole traps", Phys. Rev. A 87, 053613 (2013).
5. A.J. Olson, S.K. Mayer, "Electromagnetically Induced Transparency in Rubidium", Am. J. Phys. Vol. 77, (Feb. 2009)116-121.
6. A.J. Olson, E.J. Carlson, S.K. Mayer, "Two photon spectroscopy of rubidium using a grating feedback diode laser", Am. J. Phys. 74, (March 2006) 218-223.

SELECTED  
PRESENTATIONS

1. AJ Olson, SJ Wang, CH Li, RJ Niffenegger, CH Greene, YP Chen, "Observation of Landau-Zener transitions in spin-orbit coupled Bose-Einstein condensates". Talk at 2013 DAMOP Meeting in Quebec City, Canada.
2. AJ Olson, R Niffenegger, Sourav Dutta, Chuan-hsun Li, Yong Chen. "Gauge fields, spin-orbit coupling, and photo-association." Talk at 2012 Midwest Cold Atom Workshop in Urbana, IL.
3. AJ Olson, R Niffenegger, YP Chen "Loading and high efficiency evaporative cooling to BEC with a MACRO-FORT." Talk at 2012 APS DAMOP Meeting in Orange County, CA.
4. AJ Olson "Magnetic dipole-dipole interactions in Bose-Einstein condensates". Invited talk at University of Portland. Portland, OR.
5. AJ Olson, YP Chen "Effects of magnetic dipole-dipole interactions in Bose-Einstein condensates: geometry and stability". Poster at 2010 March Meeting in Portland, OR.