

# Wesley W. Erickson

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## Education

### University of Oregon Eugene, OR

Ph.D. in Physics, June 2020

Areas of specialization: laser-cooled atoms, computational physics, stochastic processes

Dissertation: *Lévy Motion and Laser Cooled Atoms*

Advisor: Prof. Daniel A. Steck

M.S. in Physics, June 2014

### Reed College Portland, OR

B.A. in Physics, June 2012

Thesis: *Electromagnetically Induced Transparency*

Advisor: Prof. Lucas Illing

## Publications and Notable Presentations

- [1] Wesley W. Erickson and Daniel A. Steck, "The Anatomy of an Extreme Event: What Can We Infer About the History of a Heavy-Tailed Random Walk?", *submitted for publication (preprint available: <https://arxiv.org/abs/2002.03849>)*, (2020).
- [2] Wesley W. Erickson, "Lévy Motion and Laser Cooled Atoms," Ph.D. dissertation, University of Oregon (2020).
- [3] Wesley W. Erickson and Daniel A. Steck, "Lévy Dynamics of Single Laser-Cooled Atoms," *51st Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics*, June 1–5, 2020. Portland, OR, USA. Talk abstract: <https://meetings.aps.org/Meeting/DAMOP20/Session/J09.3>
- [4] Richard V. Wagner, Wesley W. Erickson, and Daniel A. Steck. "In situ sensing of position and temperature of a single trapped atom via resonance fluorescence." *48th Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics*, June 5–9, 2017. Sacramento, CA, USA. Poster abstract: <https://meetings.aps.org/link/BAPS.2017.DAMOP.Q1.68>
- [5] Wesley W. Erickson, "Electromagnetically Induced Transparency," Undergraduate thesis, Reed College (2012).

## Research

### University of Oregon, Eugene, OR

#### *Graduate Researcher in Daniel Steck's lab.*

**September 2014 to June 2020**

- Explored the diffusion dynamics of laser-cooled atoms through simulations.
- Studied conditioned Lévy processes and their relation to extreme events.
- Performed release-recapture experiments to measure temperature of single neutral Rb atom.
- Skills: Fortran/Python/CUDA/Julia programming, tuning laser systems, ultrahigh vacuum systems, automated experimental control, electronics design/fabrication

### Reed College, Portland, OR

#### *Undergraduate Researcher in Lucas Illing's lab.*

**September 2011 to June 2012**

- Designed and constructed a spectroscopy system used to successfully measure electromagnetically induced transparency in Rubidium atoms (Undergraduate Thesis).
- Skills: Optics/laser systems, Mathematica

### Washington State University, Pullman, WA

#### *Undergraduate Researcher in Peter Engel's lab.*

**Summer 2011**

- Designed and constructed a 3d Paul trap and a linear quadrupole trap for trapping and imaging charged lycopodium dust particles. Wrote simulations in Mathematica and COMSOL demonstrating similar dynamics to the physical system.
- Skills: Mathematica, COMSOL, SolidWorks

### University of Arkansas, Fayetteville, AR

#### *Undergraduate Researcher in Vamsi Komarala's lab.*

**Summer 2010**

- Assisted in the construction of a confocal laser scanning microscope and successfully measured blinking statistics of individual colloidal quantum dots. The system had nanometer precision, with a scan routine written in LabVIEW and efficient image analysis in C.
- Skills: Optics/laser systems, LabVIEW/C programming

## Teaching Experience

### University of Oregon, Eugene, OR

#### *Graduate Employee*

**September 2018 to June 2020**

- *AY 2019-2020:* Grader for Quantum Mechanics II (PHYS 632, Winter 2020) and Quantum Mechanics III (PHYS 633, Spring 2020).
- *AY 2018-2019:* Grader for Quantum Mechanics I (PHYS 631, Fall 2018), Quantum Mechanics II (PHYS 632, Winter 2019) and Quantum Mechanics III (PHYS 633, Spring 2019).

**Graduate Teaching Fellow****September 2012 to August 2018**

- *Summer 2018*: Tutorial Instructor and Grader for General Physics II (PHYS 202) and General Physics III (PHYS 203).
- *AY 2017-2018*: Research Assistant.
- *AY 2016-2017*: Tutorial Instructor and Grader for Foundations of Physics I (PHYS 251, Fall 2016), Foundations of Physics II (PHYS 252, Winter 2017), and Foundations of Physics III (PHYS 253, Spring 2017). Lab Instructor for Foundations of Physics Labs (PHYS 290, Fall 2016 and Winter 2017).
- *AY 2015-2016*: Lab Instructor for Intro Physics Lab I (PHYS 204, Fall 2015), Intro Physics Lab II (PHYS 205, Winter 2016), and Intro Physics Lab III (PHYS 206, Spring 2016).
- *Summer 2015*: Tutorial Instructor for General Physics II (PHYS 202), and Grader for Physics of Sound and Music (PHYS 152).
- *AY 2014-2015*: Teaching Assistant for Physics of Sound and Music (PHYS 152, Fall 2014), Grader for Birth and Death of Stars (ASTR 122, Winter 2015), and Grader for Galaxies and the Expanding Universe (ASTR 123, Spring 2015).
- *AY 2013-2014*: Grader for The Solar System (ASTR 121, Fall 2013), Grader for Birth and Death of Stars (ASTR 122, Winter 2014), and Grader for Galaxies and the Expanding Universe (ASTR 123, Spring 2014).
- *AY 2012-2013*: Grader for The Solar System (ASTR 121, Fall 2012), Grader for Birth and Death of Stars (ASTR 122, Winter 2013), and Grader for Galaxies and the Expanding Universe (ASTR 123, Spring 2013).

**Reed College, Portland, OR****Teaching Assistant****September 2010 to June 2012**

- Assisted in setup and instruction for 200-level physics labs.

**Reed Research Reactor, Portland, OR****Senior Reactor Operator****September 2010 to June 2012**

- Licensed by the Nuclear Regulatory Commission.
- Prepared and presented lectures on basic reactor physics.
- Gave oral examinations to Reactor Operators and Trainees.

**Reactor Operator****September 2009 to June 2010**

- Licensed by the Nuclear Regulatory Commission.
- Led educational activities and labs for Reactor Trainees.

**Professional Memberships**

- American Physical Society (2015–present)
- The Optical Society (2015–present)

## Grants and Awards

- International High Performance Computing Summer School, Toronto, ON, Summer 2015
- Research Experience for Undergraduates, University of Arkansas, Summer 2010

## Other Activities and Outreach

### **The Optical Society – University of Oregon Student Chapter**

- Member (2012–2020)
- Treasurer (2016–2018)
- Outreach Coordinator (2018–2020)

### **S.P.I.C.E Engineering Camp Volunteer (<https://www.spicescience.org/>)**

- Designed engineering projects and curriculum for middle school girls (Summers 2013, 2014, 2015).

### **Light Extravaganza (OSA Student Chapter Event)**

- Helped organize and run a public series of optics demos (100+ participants, June 5, 2015).

### **Washington State University / University of Oregon OSA Meetup**

- Helped organize a graduate student symposium at University of Oregon (14 talks, May 10, 2014).

## More Information

- More information available at <https://weserickson.com/>