Wesley W. Erickson

Wesley W. Erickson
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Profile

Physics PhD with 6 years research experience specialized in stochastic processes, computational physics, and laser-cooled atoms. Experienced with exploratory numerical simulations and developing theoretical models, with knowledge of data analysis, statistics, and high performance computing.

Education

Ph.D. Physics, University of Oregon **September 2014 to June 2020**
Dissertation: *Lévy Motion and Laser Cooled Atoms* Advisor: Prof. Daniel A. Steck

M.S. Physics, University of Oregon **September 2012 to June 2014**

B.A. Physics, Reed College **September 2008 to June 2012**
Thesis: *Electromagnetically Induced Transparency* Advisor: Prof. Lucas Illing

Experience

University of Oregon, Eugene, OR

Graduate Research Assistant **September 2014 to June 2020**

- Explored and modeled diffusion dynamics of laser-cooled atoms through simulations with Fortran, Python, Numba/CUDA.
- Studied conditioned Lévy processes and their relation to extreme events (see [1]).
- Developed feedback/control systems to perform release-recapture experiments on a single neutral Rb atom with Perl, C, Verilog.

Graduate Teaching Fellow / Graduate Employee **September 2012 to June 2020**

- Delivered lectures, labs and tutorials; experience with both introductory and graduate level physics courses.
- Participated in course curriculum development (Physics of Sound and Music, Intro to Astronomy).

Additional Projects

COVID-19 Digital Polarization Collaboration (see [2]) **September 2020 – present**

- Wrote scripts for scraping COVID-19 related social media data with Python.
- Modeled time-dependence and correlations of various social media indicators.
- Developed metrics related to echo-chamber effects, topic polarization.

Cryptocurrency Trading Bots **January 2021 – present**

- Developed, tested, and deployed custom trading algorithms on cryptocurrency exchanges, with Python/Cython, Docker.

Skills

Stochastic processes, Lévy Processes, Itō Calculus, First-hitting-time models, Monte Carlo methods, Statistics, Dynamical Systems, Time Series Analysis, Linux, Git, Docker, KVM Hypervisor, MPI, Profiling, Python, Julia, Fortran, Perl, Mathematica, C (embedded systems), Numba/CUDA.

Selected Publications and 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] Jun Lang, Wesley W. Erickson, Zhuo Jing-Schmidt, "#MaskOn! #MaskOff! Digital polarization of mask-wearing in the United States during COVID-19", *submitted for publication*, (2021).

[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