Brian G. Richards

Ph.D. Candidate

www.briangrichards.com | www.linkedin.com/in/briangrichards

Summary

- A diligent worker at developing pipelines for data acquisition, storage, and analysis.
- Skilled at creating informative figures to present data.
- Skilled at troubleshooting equipment, such as lasers, power supplies, and computers.
- Developing package for R to solve Physics problems (available at: https://github.com/bgrich/starkr).

Education

Ph.D. Candidate, Physics, The University of Virginia, Charlottesville, VA 2010—Present

Advisor: Bob Jones

B.S., Physics, The College of William and Mary, Williamsburg, VA 2006—2010

Summa Cum Laude. Minor in Mathematics. Advisor: Seth Aubin

Thesis: Frequency Space Measurement of the Spectrum of a Mode-Locked Diode Laser

Experience

Graduate Research Assistant, Ultrafast Laser and Atomic Physics Lab 2011—Present

Department of Physics, The University of Virginia, Charlottesville, VA

I study dipole-dipole interactions in cold Rydberg gases using a magneto-optical trap. My work includes performing experiments to probe interactions in cold Rubidium, data analysis, simulations, and equipment design with Dr. Bob Jones.

Summer Undergraduate Research Fellow, Pomeroy Lab 2010

National Institute of Science and Technology, Gaithersburg, MD

I studied methods for precision resistance measurements and assisted in the fabrication and assembly of lab equipment with Dr. Josh Pomeroy.

Undergraduate Researcher, Aubin Lab 2009—2010

Department of Physics, The College of William and Mary, Williamsburg, VA

I studied methods to implement an optical frequency comb using an actively mode-locked diode laser and trained in optical experimental techniques with Dr. Seth Aubin.

Summer Undergraduate Research Fellow, Windover Lab 2009

National Institute of Science and Technology, Gaithersburg, MD

I analyzed X-ray reflectometry data using genetic algorithms and studied analysis techniques using R and Python with Dr. Donald Windover.

Teaching Experience

Graduate Teaching Assistant — Elementary Laboratory I, taught lab classes. 2014

Graduate Teaching Assistant — General Physics Workshop I, taught lab classes 2013

Graduate Teaching Assistant — Modern Physics, led discussion sections 2011; 2012

Graduate Teaching Assistant — Principles of Physics I, led discussion sections 2010; 2011

Publications

B. G. Richards and R. R. Jones, "Dipole-dipole resonance line shapes in a cold Rydberg gas." Phys. Rev. A 93, 042505 (2016).

T. Zhou, **B. G. Richards**, and R. R. Jones, "Absence of collective decay in a cold Rydberg gas." Phys. Rev. A 93, 033407 (2016).

Presentations and Talks

B. G. Richards and R. R. Jones, "Lineshapes of Dipole-Dipole Resonances in a Cold Rydberg Gas." Annual Meeting of the APS Division of Atomic, Molecular, and Optical Physics (DAMOP), Columbus, OH, June 10, 2015

T. Zhou**, B. G. Richards**, and R. R. Jones, "Absence of Collective Decay in a Cold Rydberg Gas." Annual Meeting of the APS Division of Atomic, Molecular, and Optical Physics (DAMOP), Columbus, OH, June 10, 2015

Affiliations

American Physical Society 2015—Present

Optical Society of America 2011—Present

Skills

Programming Languages: LabView, R, Markdown, LaTex, Git

Computer Programs: Microsoft Office Suite

Machine Shop: Lathe, Mill, Bandsaw

Experimental Techniques: Optical (Laser) Alignment

Familiarity with: High Voltage Systems, Acousto-Optic Modulators, Electro-Optic Modulators (Pockels Cells), Diode Lasers, Dye Lasers, Solid State Lasers (Nd:YAG), PID Feedback Control Systems, Magneto-Optical Traps (MOT), Soldering and Electronics, Ultra-High Vacuum, Ultra-fast Lasers, Mode-Locked Lasers