

Rebecca Holmes

RHOLMES4@ILLINOIS.EDU | REBECCAHOLMES.NET

- Ph.D. student in physics (graduation in next 10 months) with experience in quantum optics, laser physics, electronics & detectors, data acquisition, data analysis & scientific programming, human subject research, and interdisciplinary collaboration.
- Excellent written and oral communication skills for technical and popular audiences.
- Proven record of writing and editing effective technical proposals and white papers.
- Strong background in public outreach, from museums to the web.

Education

The University of Illinois at Urbana-Champaign

June 2011 - Present

Ph.D. in physics (expected by May 2017)

Research advisor: Dr. Paul Kwiat, Kwiat Quantum Information Group

Dissertation title: "Testing the lower limits of human vision with quantum states of light"

- Awarded a National Science Foundation Graduate Research Fellowship in 2012.
- Winner of the 2015 Optical Society of America Emil Wolf Outstanding Student Paper Competition.
- Taking aerospace engineering classes to earn a Spaceflight Engineering graduate certificate.

The University of North Carolina at Chapel Hill

August 2007 - May 2011

B.S. in physics, minor in creative writing

- Physics editor of *Carolina Scientific*, the UNC undergraduate science magazine (2010-2011).
- Undergraduate research
 - UNC Experimental Nuclear and Particle Astrophysics Group (Dr. Reyco Henning and Dr. John Wilkerson): Measured gamma rays from fission products in the atmosphere after the 2011 Fukushima reactor accident, helped build a cosmic ray spark chamber.
 - PROMPT/Skynet robotic telescope network (Dr. Dan Reichart): Photometry of gamma-ray burst afterglows with data from robotic telescopes.
 - P-23 Weak Interactions Team at Los Alamos National Laboratory (Dr. Steve Elliott, MAJORANA collaboration): Quantified effects of microphonic noise on energy resolution in germanium detectors.

Employment

Morehead Planetarium and Science Center

Chapel Hill, NC

Student educator

August 2007 - May 2011

Presented hundreds of live science demo shows and programs on current issues in science for K-12 school groups and the public. Taught summer science camps and wrote a camp curriculum. Awarded the 2009 Jupiter Ball Fellowship to develop an outreach event about science & art.

Publications & Presentations

- 2016 International Conference on Quantum Communication, Measurement and Computing (poster)
- R. Holmes, et al. in Frontiers in Optics 2015, OSA Technical Digest (online) (Optical Society of America, 2015), paper FTu5B.5. (oral presentation)
- 2014 Visual Cognition and Human Performance brownbag lunch series at the University of Illinois Psychology Department in Champaign, IL (oral presentation)
- R. Holmes, et al. in Research in Optical Sciences, OSA Technical Digest (online) (Optical Society of America, 2014), paper QTu2A.2. (oral presentation)
- R. Holmes, et al. in The Rochester Conferences on Coherence and Quantum Optics and the Quantum Information and Measurement meeting, OSA Technical Digest (online) (Optical Society of America, 2013), paper W6.06. (poster)
- 2012 Midwest Cold Atom Workshop in Urbana, IL (oral presentation)
- R. Holmes, et al. in Conference on Lasers and Electro-Optics 2012, OSA Technical Digest (Optical Society of America, 2012), paper QTu1E.8. (oral presentation)
- S. MacMullin, G.K. Giovanetti, M.P. Green, R. Henning, R. Holmes, K. Vorren and J.F. Wilkerson, "Measurement of airborne fission products in Chapel Hill, NC, USA from the Fukushima Dai-ichi reactor accident," *Journal of Environmental Radioactivity*, 112, 165-170 (2012).

Other Activities & Skills

- Scientific programming: MATLAB, Python, LabVIEW, C++ (GitHub: piscisvolans)
- Web programming and applications: HTML, CSS, JavaScript, Ruby on Rails, Jekyll, PHP, SQL
 - o Designed and wrote content for the Kwiat research group website at <http://research.physics.illinois.edu/QI/Photonics/>
- Mentoring undergraduate physics majors in the Illinois GPS program
- Answering science questions from the public on the Physics Illinois website:
 - o List of favorite answers at <http://rebeccaholmes.net/askthevan/>
- Co-wrote a short video which won the Optical Society of America "Enabled by Optics" contest:
 - o "How does an optical fingerprint sensor work?" <https://youtu.be/CLdrbn8XYIw>