

# ANDREW M. C. DAWES

## Curriculum Vitæ

Duke University  
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## EDUCATION

- 2005 M.A. in Physics *Duke University, Durham, NC*  
2002 B.A. with honors in Physics *Whitman College, Walla Walla, WA*

## RESEARCH EXPERIENCE

- 2003– Research Assistant, Department of Physics, Duke University, Durham, NC  
*Projects include: low-light all-optical switching in Rubidium, observation of optical precursors, slow light in optical fiber, and Rb cooling and trapping. Advisor: Daniel J. Gauthier*
- 2000–02 Undergraduate Researcher, Physics Department, Whitman College, Walla Walla, WA  
*Project: Optimized quantum state measurement using array detectors. Advisor: Mark Beck*

## TEACHING EXPERIENCE

- (2008) Instructor, Department of Physics, Duke University, Durham, NC  
*Developing a research-skills course for advanced undergraduates and beginning graduate students. Topics include: LabVIEW programming, data automation, data analysis and visualization, opto-mechanical systems, numerical modelling (C++), and the LaTeX document preparation system.*
- 2006–07 Elementary School Outreach, Department of Physics, Duke University, Durham, NC  
*Designed and led outreach activities for Sound generation, propagation, and perception (2nd grade), Light propagation, perception, and color mixing (3rd grade), and Electromagnetism and electrical generators (5th grade).*
- 2005–06 Physics Tutor, Peer Tutoring Center, Duke University, Durham, NC  
*Tutored seven students, on average two per semester. Courses included introductory mechanics and introductory electricity and magnetism for majors, pre-med students, and engineers (6 courses total).*
- 2002–04 Teaching Assistant, Department of Physics, Duke University, Durham, NC  
*Led laboratory sessions for: introductory mechanics and electricity and magnetism for engineers, and introductory mechanics for pre-med students. Graded homework and held office hours for introductory electronics.*
- 2001–02 Teaching Assistant, Physics Department, Whitman College, Walla Walla, WA  
*Led and assisted with laboratory sessions for an advanced electronics course and two introductory “Workshop Physics”-style lab courses.*

## FELLOWSHIPS AND AWARDS

- 2006 OSA New Focus/Bookham Student Award - Finalist
- 2005 John T. Chambers Fellowship, Fitzpatrick Center for Photonics and Communications Systems, Duke University
- 2005 Walter Gordy Graduate Fellowship, Department of Physics, Duke University

2004	Teaching Assistant of the Year, Department of Physics, Duke University
2001	APS Best Student Presentation, Northwest Section Meeting
2000,01	Stanley Rall Student Research Awards, Whitman College
1998–2002	William O. Douglas Scholar, Whitman College

## SERVICE

Reviewer for Optics Express

Graduate student representative to faculty committees: Physics Computing Committee, and Physics Department Website design committee

## UNDERGRADUATE STUDENTS MENTORED

Alan Lee, Duke University, Characterization of coaxial cable photonic crystals (2005)

Susan Clark, Duke University, Ultra-low-light All-optical switching (2002-2004)

## MEMBERSHIPS

American Physical Society, Optical Society of America

## PUBLICATIONS

### Peer-reviewed publications

- [6] Z. Zhu, A. M. C. Dawes, D. J. Gauthier, L. Zhang, and A. E. Willner, Broadband SBS slow light in an optical fiber, *J. Lightwave Tech.* 25, 201 (2007).
- [5] H. Jeong, A. M. C. Dawes, and D. J. Gauthier, Direct observation of optical precursors in a region of anomalous dispersion, *Phys. Rev. Lett.* 96, 143901 (2006).
- [4] M. D. Stenner and M. A. Neifeld, Z. Zhu, A. M. C. Dawes, and D. J. Gauthier, Distortion management in slow-light pulse delay, *Opt. Express* 13, 9995 (2005).
- [3] A. M. C. Dawes, L. Illing, S. M. Clark, and D. J. Gauthier All-optical switching in rubidium vapor *Science* 308, 672 (2005).
- [2] A. M. Dawes, M. Beck, and K. Banaszek Mode optimization for quantum-state tomography with array detectors *Phys. Rev. A* 67, 032102 (2003).
- [1] A. M. Dawes and M. Beck Simultaneous quantum state measurements using array detection *Phys. Rev. A* 63, 040101(R) (2001).

### Submitted Publications and Articles in Preparation

- [3] J. A. Greenberg, M. Oria, A. M. C. Dawes, D. J. Gauthier, Absorption-Induced Trapping in an Anisotropic Magneto-optical Trap submitted for publication (2007).
- [2] A. M. C. Dawes, L. Illing, J. A. Greenberg, D. J. Gauthier, All-Optical Switching with Transverse Optical Patterns, submitted for publication (2007).
- [1] H. Jeong, A. M. C. Dawes, L. Illing, and D. J. Gauthier, Step-modulated pulse propagation through a narrow single-resonator absorber, in preparation

### General audience publications

- [1] A. M. C. Dawes, L. Illing, S. M. Clark, D. J. Gauthier All-Optical Switch Controls Strong Beams with Weak Ones, in *Optics and Photonics News* 16, no. 12, pp. 34 (2005).

### Proceedings

- [3] A. M. C. Dawes and D. J. Gauthier, Using Transverse Patterns for All-Optical Switching, to appear in *Coherence and Quantum Optics IX* (2007).
- [2] A. M. C. Dawes, S. M. Clark, L. Illing, D. J. Gauthier Observation of ultra-low-light-level all-optical switching in *Advanced Optical and Quantum Memories and Computing II*; H. J. Coufal, Z. U. Hasan, and A. E. Craig; Eds., *Proc. SPIE 5735*, 60-68 (2005).
- [1] A. M. Dawes and M. Beck Simultaneous quantum state measurements using array detection in *Coherence and Quantum Optics VIII*; N. P. Bigelow, J. H. Eberly, C. R. Stroud, and I. A. Walmsley; Eds., (Kluwer Academic/Plenum, New York, 2003) p. 301.

### CONFERENCE PRESENTATIONS

- [11] "Using transverse patterns for all-optical switching," Fitzpatrick Institute for Photonics 7<sup>th</sup> Annual Meeting, Durham, NC, October 11-12, 2007 (poster)
- [10] "Using transverse patterns for all-optical switching," The Ninth Rochester Conference on Coherence and Quantum Optics, Rochester, NY, June 10-13, 2007 (poster)
- [9] "All-optical switching: the weak controlling the strong," Fitzpatrick Institute for Photonics 6<sup>th</sup> Annual Meeting, Durham, NC, September 28-29, 2006 (poster)
- [8] "Recent progress in low-light switching via optical patterns," Conference on coherent control of the fundamental processes in optics and X-ray-optics, Nizhny Novgorod - Kazan, Russia, June 29 - July 3, 2006 (invited talk)
- [7] "Improving the Bandwidth of SBS-Based Slow-Light Delay," Conference on Lasers and Electro-Optics and Quantum Electronics and Laser Science Conference (CLEO/QELS), Long Beach, CA, May 21-26, 2006 (talk)

- [6] “All-optical switching: the weak controlling the strong,” Dynamics Days 2006, Bethesda, MD, January 4-7, 2006 (poster)
- [5] “Observation of ultra-low-light-level all optical switching,” Photonics West, San Jose, CA, January 22-27, 2005 (invited talk)
- [4] “Information Velocity,” Fitzpatrick Institute for Photonics 4<sup>th</sup> Annual Meeting, Durham, NC, May 11-12, 2004 (poster)
- [3] “Mode optimization for quantum-state tomography with array detectors,” Eighth Rochester Conference on Coherence and Quantum Optics, Rochester, NY, June 13-16, 2001 (talk)
- [2] “Simultaneous quantum state measurement using array detection,” Northwest Section APS Meeting, Seattle, WA, May 25-26, 2001 (talk)
- [1] “Simultaneous quantum state measurement using array detection,” 9<sup>th</sup> Regional Conference on Undergraduate Research, Murdock College Science Research Program, University of Puget Sound, Tacoma, WA (2000) (poster)