

Colleen A. Marlow

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CURRICULUM VITAE

Education

- 9/00-9/05 **PhD.** Physics, University of Oregon, Eugene, OR
9/94-3/99 **B.S.** Physics, California Polytechnic State University, San Luis Obispo, CA

Research Interest

My research is in two fields; nanoscience and neuroscience. In the first field I have focused on nonlinear electron behavior by observing quantum interference effects in semiconductor nanostructures. In neural systems, I use computational techniques based in fractal, spectral and correlation analysis to study the human visual system and the bird song system.

Research Experience

- 8/06-2/08 Keck Center for Integrative Neuroscience, UCSF, CA
Sloan Post-Doc Research Fellow
Computational analysis of complex behavioral and neural data extending from neural firing in the birdsong system to eye tracking of complex patterns in humans
- 4/02-11/05 Materials Science Institute, University of Oregon, OR
Research Fellow in the Richard Taylor Lab
Experimental design and measurement of low temperature magnetoconductance fluctuations in semiconductor nanostructures, device fabrication, analysis and modeling of results.
- 1/03-4/03 Nanometer Consortium at Lund University, Lund, Sweden
Visiting Scientist
Process development and fabrication of GaInAs/InP nanoelectronic structures

Teaching Experience

- 9/11-present Physics Department, California Polytechnic State University, San Luis Obispo, CA, USA **Full-time Lecturer**
- 1/09-9/11 Physical Science Department, College of Marin, Kentfield, CA
Full-time Tenure-Track Instructor, Part-time Instructor (1/09-12/09)

Professional Service and Outreach

- 1/12 National Science Foundation, Washington DC, USA
2012 NSF Graduate Research Fellowship Program (GRFP)
Grant Application Review Panelist
- 6/08-7/08 SMASH Program, Level Playing Field Institute, San Francisco, CA
Full-time Instructor/Mentor, Program for low-income minority high school students

Awards

- Fall 2009 **Internal Research and Development Grant:** College of Marin, Kentfield, CA
2006-2008 **Sloan Post-Doctoral Fellow:** UCSF
2002-2005 **IGERT Fellowship** (National Science Foundation)

Select Publications

1. "Surviving Conduction Symmetries in Non-linear Response", **C. A. Marlow**, A. Löfgren, I. Shorubalko, R.P. Taylor, P. Omling, L. Samuelson, and H. Linke *Superlattices and Microstructures* **34**, 173-177 (2003) (REFEREED)
2. "Symmetry of Two Terminal Non-linear Electrical Current" A. Lofgren, **C. A. Marlow**, I. Shorubalko, R.P. Taylor, L. Samuelson and H. Linke, *Physical Review Letters* **92**, 046803-1 (2004) (REFEREED)
3. "Experimental investigation of the Breakdown of the Onsager-Casimir Relations" **C. A. Marlow**, R.P. Taylor, M. S. Fairbanks, I. Shorubalko and H. Linke *Physical Review Letters* **96**, 116801 (2006) (REFEREED)
4. "A Unified Model of Fractal Conductance Fluctuations for Ballistic and Diffusive Semiconductor Devices" **C. A. Marlow**, R.P. Taylor, T. P. Martin, B. C. Scannell, H. Linke, M. S. Fairbanks, G. D. R. Hall, I. Shorubalko, L. Samuelson, T. M. Fromhold, C. V. Brown, B. Hackens, S. Faniel, C. Gustin, V. Bayot, X. Wallart, S. Bollaert and A. Cappy *Physical Review B* **73**, 195318 (2006) (REFEREED)
5. "Symmetry of Magnetoconductance Fluctuations of Quantum Dots in the Nonlinear Response Regime" A. Lofgren, **C. A. Marlow**, T. E. Humphrey, I. Shorubalko, R. P. Taylor, P. Omling, R. Newbury, P. E. Lindelof, H. Linke *Physical Review B* **73**, 235321 (2006) (REFEREED)
6. "Confinement Properties of a Ga_{0.25}In_{0.75}As/InP Quantum Point Contact" T.P. Martin, **C. A. Marlow**, L. Samuelson, A.R. Hamilton, H. Linke, R.P. Taylor *Physical Review B* **77**, 155309 (2008) (REFEREED)
7. "Enhanced Zeeman Splitting in Ga_{0.25}In_{0.75}As Quantum Point Contacts" T.P. Martin, A. Szorkovsky, A.P. Micolich, A.R. Hamilton, **C. A. Marlow**, H. Linke, R.P. Taylor, L. Samuelson *Applied Physics Letters* **93**, 012105 (2008) (REFEREED)
8. "Investigation of Electron Wave Function Hybridization in Ga_{0.25}In_{0.75}As arrays" T.P. Martin, M. S. Fairbanks, B. C. Scannell, **C. A. Marlow**, H. Linke, R.P. Taylor *Applied Physics Letters* **95**, 182105 (2009) (REFEREED)
9. "Field-orientation Dependence of the Zeeman Spin Splitting in (In,Ga)As Quantum Point Contacts" T.P. Martin, A. Szorkovsky, A.P. Micolich, A.R. Hamilton, **C. A. Marlow**, H. Linke, R.P. Taylor, H. Q. Xu *Physical Review B* **81**, 041303R (2010) (REFEREED)
10. "Field-orientation Dependence of the Zeeman Spin Splitting in (In,Ga)As Quantum Point Contacts" T.P. Martin, A. Szorkovsky, A.P. Micolich, A.R. Hamilton, **C. A. Marlow**, H. Linke, R.P. Taylor, H. Q. Xu (Submitted to *Physical Review Letters*) (2011) (REFEREED)
11. "Scale Invariance of Human Eye Movements " **C. A. Marlow**, A. Matlin, B. L. Miller, R.P. Taylor (Manuscript currently in progress) (2011)