

William Charles DeGraffenreid

California State University, Sacramento
Department of Physics and Astronomy
6000 J Street
Sacramento, CA 95819-6041

Phone: (916) 278-5938
E-mail: degraff@csus.edu
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Education

University of Maryland Ph.D. in Chemical Physics Dissertation: <i>Cold Collisions in an Optically Brightened Sodium Beam</i> Dissertation Advisor: Prof. John Weiner	College Park, MD	July 1995 - Sept. 2000
California State Polytechnic University B.S. in Physics with a minor in Chemistry <i>Magna Cum Laude</i> Senior Thesis: <i>The Leidenfrost Effect in a Binary Mixture</i>	Pomona, CA	Sept. 1991 - June 1995

Experience

California State University, Sacramento Department Chair, Aug. 2011 – Present Professor of Physics, Aug. 2011 – Present Associate Professor of Physics, Aug. 2006 – Aug. 2011 Assistant Professor of Physics, Aug. 2002 – Aug. 2006 Faculty Advisor, Society of Physics Students and $\Sigma\Pi\Sigma$, Aug. 2002 – Present Chair, NSM Academic Council, Aug. 2012 – Present Chairs Representative, Academic Affairs Budget Advisory Committee, 2013 – Present Faculty Representative, Campus Physical Planning Committee, 2015 – Present Associate Director, Center for STEM Excellence, Aug. 2006 – Aug. 2007	Sacramento, CA	Aug. 2002 – Present
Sigma Pi Sigma, the Physics Honor Society President, June 2012 – June 2014 Chair, 2016 Quadrennial Physics Congress, June 2012 - Present	College Park, MD	June 2012 – Present
University of California, Davis Visiting Scholar, Department of Civil and Environmental Engineering	Davis, CA	Jan. 2011 – Aug. 2011
Society of Physics Students National Council Member from Zone 18 (California, Nevada, Hawaii, and Philippines)	College Park, MD	June 2003 – June 2009
National Institute of Standards and Technology Guest Researcher, Physics Laboratory	Gaithersburg, MD	Jan. 2003 – Aug. 2004
National Institute of Standards and Technology NRC Postdoctoral Fellow, Physics Laboratory	Gaithersburg, MD	Sept. 2000 – Aug. 2002

University of Maryland	College Park, MD	July 1995 – Sept. 2000
Research Assistant, Laboratory for AMO Science and Engineering (LAMOSE), May 1996 – Sept. 2000		
Teaching Assistant, Department of Chemistry, Aug. 1995 – May 1996		
Research Assistant, Institute for Physical Science and Technology, July 1995 – Sept. 1995		
Universidade de São Paulo, São Carlos	São Carlos, SP, Brazil	Sept. 1996 – Dec. 1996
Visiting Researcher, Institute de Física de São Carlos		

Grants and Awards

Nov. 2015	2015 Natural Sciences and Mathematics Outstanding Community Service Award
Nov. 2013	2013 Natural Sciences and Mathematics Outstanding Teaching Award
Jan. 2011 – Aug. 2011	Sabbatical at UC Davis. Development of high sensitivity laser spectroscopy system to characterize the optical properties of aerosols.
Apr. 2010	2010 Natural Sciences and Mathematics Outstanding University Service Award
Aug. 2005 – July 2006	Sacramento State Pedagogy Enhancement Award. "Development of an Interdisciplinary Spectroscopy Course." Co-PI with Dr. Susan Crawford, Sacramento State Department of Chemistry. \$11,350 (Six Units Total Release Time + \$800). Award declined due to scheduling issues as Dr. Crawford was elected department chair.
Aug. 2004 – July 2007	NSF Major Research Instrument Grant (CHE-0420662). "Development and Applications of Aerosol Charge and Aerosol Photoionization Detectors for High Performance Liquid Chromatography." Co-PI with Dr. Roy Dixon, Sacramento State Department of Chemistry. \$205,729
July 2004 – June 2005	Sacramento State Instructionally Related Activities (IRA) Grant. "Summer Research Experiences for Chemistry and Physics/Astronomy Students." Co-PI with L. Roberts, R. Dixon, S. Crawford, and E. Martinez. \$10,000
July 2003 – June 2004	Sacramento State Instructionally Related Activities (IRA) Grant. "Summer Research Experiences for Chemistry and Physics/Astronomy Students." Co-PI with L. Roberts, R. Dixon, and S. Crawford. \$10,000
May 2003	Paper entitled "Foreign gas broadening and shift of the $2^2S_{1/2} - 4^2S_{1/2}$ two-photon transition of atomic lithium" chosen as an Institute of Physics Select Publication
Sept. 2000 – Aug. 2002	National Research Council Postdoctoral Fellowship
Aug. 1995 - June 1997	University of Maryland Graduate Fellowship
1993	Sigma Pi Sigma National Physics Honor Society

Professional Organizations

Sigma Pi Sigma ($\Sigma\Pi\Sigma$)

Society of Physics Students (SPS)

American Association of Physics Teachers (AAPT)

Publications - Journal Articles

W. DeGraffenreid, S. C. Campbell, and C. J. Sansonetti. "Reference lines in the optogalvanic spectra of uranium and thorium in the wavelength range 422 to 462 nm." *J. Opt. Soc. Am. B* **29**, 1580 (2012).

W. DeGraffenreid, "Teaching Ethics: The Seminar Model," *The CUR Quarterly* **30**, 35 (2010).

W. DeGraffenreid and C. J. Sansonetti. "Coincidence in the two-photon spectra of Li and Li_2 at 735 nm." *J. Phys. B: At. Mol. Opt. Phys.* **38**, 457 (2005).

J. Ramirez-Serrano, W. DeGraffenreid, J. Weiner, E. Tiesinga, and P. S. Julienne. "Beam-loss Spectroscopy of Cold Collisions in a Brightened Sodium Beam." *Phys. Rev. A* **69**, 042708 (2004).

W. DeGraffenreid, S. C. Campbell, and C. J. Sansonetti. "Foreign gas broadening and shift of the $2\ ^2S_{1/2} - 4\ ^2S_{1/2}$ two-photon transition of atomic lithium." *J. Phys. B: At. Mol. Opt. Phys.* **36**, 2099 (2003). (IoP Select Publication)

W. DeGraffenreid and C. J. Sansonetti. " $2\ ^2S_{1/2} - 4\ ^2S_{1/2}$ transition of atomic lithium by Doppler-free two-photon spectroscopy." *Phys. Rev. A* **67**, 012509 (2003).

W. DeGraffenreid and C. J. Sansonetti. "Reference lines in the optogalvanic spectra of uranium and thorium over the wavelength range 694 - 755 nm." *J. Opt. Soc. Am. B* **19**, 1711 (2002).

J. Ramirez-Serrano, W. DeGraffenreid, and J. Weiner. "Polarization-dependent spectra in the photoassociative ionization of cold atoms in a bright sodium beam." *Phys. Rev. A* **65**, 052719 (2002).

W. DeGraffenreid, J. Ramirez-Serrano, Y.-M. Liu, A. Rosenbaum, J. Weiner, and R. Napolitano. "Structure in the Angular Dependence of Optical Suppression of Photoassociative Ionization Collisions within an Optically Cooled and Collimated Sodium Atom Beam." *Appl. Phys. B* **71**, 881-884 (2000).

W. DeGraffenreid, J. Ramirez-Serrano, Y.-M. Liu, and J. Weiner. "A Continuous, Dense, Highly Collimated Sodium Beam." *Rev. Sci. Instrum.* **71**, 3668-3676 (2000).

Publications - Other

W. T. Hill, III and C. H. Lee, "Light-Matter Interaction: Atoms and Molecules in External Fields and Nonlinear Optics," (Wiley, New York, 2007) ISBN: 978-3-527-40661-6. Partially illustrated by William DeGraffenreid.

J. Weiner and P.-T. Ho, "Light-matter interaction, fundamentals, and applications," (Wiley, New York, 2003) ISBN: 0-471-25377-4. Illustrated by William DeGraffenreid.

Selected Invited Presentations

"Put Congress in Action at Home"

Closing Workshop

Sigma Pi Sigma Quadrennial Physics Congress

November 2016

"Cavity Ring Down Spectroscopy: Kilometer Pathlengths on a Tabletop"

Chemistry and Biochemistry Seminar Series

California State University, Sacramento

Sacramento, CA

May 2012

"The LASER at 50: History, Principles, and Chemistry Applications"

Chemistry and Biochemistry Seminar Series

California State University, Sacramento

Sacramento, CA

October 2010

"Lasers: 50 Years of Solutions Waiting for Problems"

Science in the River City

Sacramento, CA

February 2010

"Scientific Professionalism / Ethics"

Society of Physics Students Zone 18 Regional Meeting

San Bernardino, CA

April 2009

"Professionalism Workshop"

SPS Zone 16 / Four Corners APS Joint Meeting

Northern Arizona University

Flagstaff, AZ

October 2007

"Teaching Professionalism to Undergraduates"

Southern California American Association of Physics Teachers / SPS Zone 18 Joint Meeting

University of Southern California

Los Angeles, CA

April 2007

"Structure of lithium: what we looked for, what we found, what we discovered en route, and what we discovered looking back"

Physics Colloquium Series

California State Polytechnic University

Pomona, CA

April 2006

"Scientific Professionalism / Ethics"

Society of Physics Students Zone 18 Regional Meeting

Sacramento, CA

April 2006

"Structure of lithium: what we looked for, what we found, what we discovered en route, and what we discovered looking back"

Physics Colloquium Series

California State University, Fresno

Fresno, CA

February 2006

"Doin' it Cheap and Easy: Optogalvanic Frequency References"

Physics Colloquium Series

California State University, Sacramento

Sacramento, CA

October 2003

"High Precision Laser Spectroscopy at NIST"

SSU Society of Physics Students Seminar

Sonoma State University

Rohnert Park, CA

October 2001

"High Precision Laser Spectroscopy: Just Like Measuring the Distance Between Union College and Cal Poly Pomona to Five Millimeters!"

Union College Physics Department Colloquia

Union College

Schenectady, NY

September 2001

"An Optically Brightened Sodium Beam: How To Make It And What To Do With It"

Laboratory for Atomic, Molecular, and Optical Science and Engineering Seminar Series

University of Maryland

College Park, MD

May 2000

"Cold Collisions in a Cold, Bright Beam"

Formation of Cold Molecules Workshop

Les Houches, France

March 1999

"Laser Cooling: An Apparent Paradox"

Physics Seminar Series

California State Polytechnic University

Pomona, CA

October 1997

"The Leidenfrost Effect in Binary Systems"

Physics Seminar Series

California State Polytechnic University

Pomona, CA

May 1995

"The Leidenfrost Effect"

Society of Physics Students Zone 18 Annual Meeting

Pomona, CA

January 1995

Selected Contributed Presentations

"Head direction cell activity recorded during alteration of geomagnetic field polarity"

Society for Neuroscience Annual Meeting

San Diego, CA

November 2010

"Advanced Laboratories at Sacramento State"

American Physical Society April Meeting

Saint Louis, MO

April 2008

"Effects and Use of Spray Electrification in Aerosol Charge Detection for HPLC"

International Symposium and Exhibit on High-Performance Liquid Phase Separations and Related Techniques

San Francisco, CA

June 2006

"Development of an Economical Detector for HPLC Utilizing Spray Electrification"

CSU Biotechnology Symposium

San Jose, CA

January 2006

"Coincidence in the Two-photon Spectra of Li and Li_2 "

APS – California Section Meeting

Sacramento, CA

October 2005

"Teaching Professionalism/Ethics to Undergraduates"

AAPT National Meeting

Salt Lake City, UT

August 2005

"Trials and Tribulations: Laser Spectroscopy of Lithium"

AAPT National Meeting

Sacramento, CA

August 2004

"Laser Spectroscopy of the Lithium Atom: Oops and Redemption"

Joint Meeting of the Northern California AAPT and APS - California Section

Berkeley, CA

November 2003

"Two-photon spectroscopy of low-lying states of lithium"

DAMOP Annual Meeting

Williamsburg, VA

May 2002

"Two-photon spectroscopy of low-lying states of lithium: energy levels, hyperfine structure, and isotope shifts"

Quantum Electronics and Laser Science Conference (QELS)

Long Beach, CA

May 2002

"Optogalvanic reference lines of uranium and thorium over the wavelength range 694 – 755 nm"
Quantum Electronics and Laser Science Conference (QELS)
Long Beach, CA
May 2002

"Two-photon spectroscopy of the 4S state of atomic lithium: energy levels, hyperfine structure, and isotope shifts"
Sigma Xi Post Doctoral Poster Presentations – NIST Chapter
Gaithersburg, MD
February 2002

"Measurement of the $3^2S - 2^2S$ transition isotope shift in atomic lithium"
DAMOP Annual Meeting
London, Ontario, Canada
May 2001

"Reference lines in the optogalvanic spectra of uranium and thorium over the wavelength range 694 - 755 nm"
DAMOP Annual Meeting
London, Ontario, Canada
May 2001

"Angular Structure and Quantum Interference in the Optical Suppression of Photo-associative Ionization in a Brightened Sodium Beam"
DAMOP Annual Meeting
Storrs, CT
June 2000

"Structure in the Anisotropy of High-Field Optical Suppression in Photoassociative Ionization Collisions within an Optically Slowed and Collimated Sodium Atom Beam"
OSA Annual Meeting
Santa Clara, CA
September 1999

"Polarization Dependence of Optical Suppression in a Sodium Beam"
International Quantum Electronics Conference (IQEC)
San Francisco, CA
May 1998