

BRIAN B. BAUMGARTNER

107 Don Lorenzo Court, Aptos, CA 95003 ♦ Ph: 831.247.0473 ♦ b.b.baumgartner@gmail.com ♦ www.brianbaumgartner.net

SUMMARY: A professional with experience in the engineering and experimental science fields through past employment in industry, university research, and leadership roles. This work included instrumentation research, design, and development, as well as roles in leadership. Past positions have included engineering work with the **U.S. Department of Defense** and **Australian Astronomical Observatory**.

EDUCATION

B.S. Physics, Minor: Environmental Systems

University of California, San Diego (2009)

RELEVANT COURSEWORK

Electricity & Magnetism Lab

C/C++ Programming

Partial Differential Equations

Directed Research

Quantum Physics

Modern Physics Laboratory

Finite Element Analysis

Electromagnetism

Computational Physics

Physical Measurements Laboratory

Computer Aided Design

Mechanics

Digital & Analog Electronics Laboratory

Experimental Techniques Laboratory

Cryptography

PUBLICATIONS, CONFERENCES, AND PRESENTATIONS

- W.A. Coles, T.W. Murphy Jr., J.F. Melser, J.K. Tu, G.A. White, K.H. Kassabian, K. Bales, and B.B. Baumgartner, "A Radio System for Avoiding Illuminating Aircraft with a Laser Beam", *October, 2009*, <http://arxiv.org/0910.5685>
- "Focal Ratio Degradation for Novel Fiber Geometries," ATNF/AAO Summer Vacation Student Symposium
- Attendee: Australian Optics conference at the University of Sydney in December 2010.

TECHNICAL SKILLS

Pro/Engineer Wildfire, SolidWorks, COSMOSWorks, Mechanica, MATLAB, Mathematica, LabVIEW, Basic C/C++, Python, Streams 5, Finite Element Analysis, Linux/UNIX, DAQ, Assembler, soldering, circuits, ORIGIN, Oscilloscopes, Voltmeter/Multimeters

TECHNICAL EXPERIENCE

Australian Astronomical Observatory, Instrument Science Fellow, Sydney, Australia (December 2010 – April 2011)

- Commissioned experimental apparatus for current and future testing of fiber optics relevant to astronomical instrumentation.
- Worked with optical equipment to explore focal ratio degradation performance for fiber optic cables of varying core shapes and sizes.
- Developed software for data analysis within project working in a Linux computing environment.
- Constructed and administered all levels of testing and preparation, including experimental setup, data acquisition, and data analysis.
- Presented academic talk on subject to report research findings and progress to CSIRO and AAO faculty and students.
- Worked independently through majority of project, with little to no supervision.

United States Department of Defense, Mechanical Engineer, Monterey, CA (January 2010 – December 2010)

- Designed electromechanical equipment to meet research goals for underwater and Antarctic deployments.
- Worked with SolidWorks mechanical drafting software extensively for design, development, and optimization of parts & equipment.
- Conducted calibration tests of equipment prior to deployment in the Arctic, including instrument and software functionality checks.
- Wrote programs for instrument control, data collection, and data analysis, working in a Linux computing environment.
- Developed extensive procedural notes for tests and construction, including written instructions on all aspects of projects phases.
- Issued United States Government "Public Trust" security clearance for base access and work.

Center for Astrophysics & Space Sciences, Assistant Researcher, La Jolla, CA (January 2009 – August 2009)

- Constructed and characterized a radio transponder antenna to detect and interpret transmission signals from aircraft.
- Researched and tested components for use in the laser box.
- Conducted data analysis, including signal processing, coding, and interpretation, for transponder project.
- Diagnosed and troubleshot a malfunctioning water pump on the telescope laser.

Marine Physical Laboratory, Assistant Engineer, La Jolla, CA (March 2009 – August 2009)

- Researched wave-generated spray using the Scripps Hydraulics Laboratory's forty-meter wave channel.
- Worked with DAQ hardware and imaging software to examine and analyze seawater bubbles in a controlled environment.
- Built and maintained experiment apparatus during project.
- Worked alone on individual research projects and with colleagues on experiment preparation and implementation.

LEADERSHIP EXPERIENCE

UC San Diego, Revelle College Resident Advisor & Senior Programming Intern, La Jolla, CA (2006 – 2008)

- Worked with minimal supervision to complete weekly event programming and entrusted with responsibly managing \$6,000+ budget.
- Served on committees, advised students and student organizations, and implemented large-scale events for residential college.
- Received training in student support and conflict management.
- Trusted with highly sensitive and confidential information—above and beyond that of most other staff members.

UC San Diego, Outback Adventures Outings Guide, La Jolla, CA (2005 – 2009)

- Entrusted with the safe leadership participant groups into the wilderness, as well as budgeting and organizing all aspects of trips.
- Participated in Class B driver, wilderness medicine and logistics, and group facilitation.
- Entrusted with sensitive personal health and medical history information of participants.

ADDITIONAL SKILLS AND CREDENTIALS

Leadership, Public Speaking, Teamwork, Independent Worker, Spanish, CA Commercial Class B License, Budget, Personnel, & Time Management

AWARDS

- **Ernest C. Mort Leadership Excellence Award**, Revelle College, UC San Diego (May 2009)
- **Jen Snell Award**, Revelle Residence Life (May 2008)
- **Outstanding Returning Paraprofessional**, Inter-College Resident's Association (May 2008)
- **Regional Social Program of the Month**, National Association of College and University Residence Halls (May 2007)