Julie A. Bert

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EDUCATION:

2006-2012 (expected)	Stanford University PhD Physics
2001-2005	Princeton University AB Magna Cum Laude in Physics Certificate in Engineering Physics (Electrical Engineering)

RESEARCH EXPERIENCE:

Sept 2006-present **Stanford University: PhD Degree** Stanford, CA

Working with Professor Kathryn A. Moler, operated and maintained a home-built electro-mechanical scanner with an integrated magnetic sensor for characterization of novel materials materials and mesoscopic phenomena.

- Imaging magnetic and superconducting properties in complex oxides
- Analysis of fluctuation superconductivity in rings
- Characterization of flux noise in thin films
- Fabrication and characterization of sub-micron scanning SQUID susceptometers
- Measurements of persistent currents in normal metal rings

2004-05 **Princeton University: Senior Thesis** Princeton, NJ

Working with Professor Stephen A. Lyon in electrical engineering. Built a microfluidic CCD detector for moving and sensing electrons on liquid helium. Published results in Applied Physics Letters.

Sum 2004 **University of Colorado: Summer REU** Boulder, CO

Working with Professor Konrad Lehnert, designed and built a cryogenic mechanical break junction experiment to measure electrical shot noise in atomic point contacts.

Spring 2004 **Princeton University: Junior Research Paper** Princeton, NJ

Working with Professor William Happer. Paper title "Mathematical modeling of photonic crystals"

Fall 2003 **Princeton University: Junior Research Paper** Princeton, NJ

Working with Professor Stephen A. Lyon. Paper title "A readout scheme for a quantum computer using electrons on the surface of liquid helium"

Sum 2003 **KEK High Energy Accelerator** Tsukuba, Japan
Working with Professor Daniel R. Marlow, wrote code to reconstruct the ratio between charged and neutral B mesons using data from the Belle detector. Assisted in upgrading the detector.

Sum 2002 **Gran Sasso National Laboratory** Assergi, Italy
Working with Professor Frank Calaprice, assisted in construction and installation of the scintillator containment vessels for the Borexino solar neutrino detector.

AWARDS:

2011	First Place Poster at Stanford's Annual Nanoprobes Workshop
2008	Runner-Up Poster at Stanford's Annual Nanoprobes Workshop
2007	Paul H. Kirkpatrick Award for Excellence in teaching, Stanford University
2005	Shenstone Prize for outstanding undergraduate research, Princeton University
2005	Jeffery O. Kephart '80 Prize for most outstanding student in Engineering Physics, Princeton University
2005	Elected as Member of the Sigma Xi National Scientific Honor Society
2004	Academic prize for female students in physics, Princeton University
2002	Shapiro Prize for Academic Excellence, Princeton University

REFEREED PUBLICATIONS:

1. J. A. Bert, N. C. Koshnick, H. Bluhm and K. A. Moler "Fluxoid fluctuations in mesoscopic superconducting rings" *Physical Review B* **84** 134523 (2011).

2. J. A. Bert, B. Kalisky, C. Bell, M. Kim, Y. Hikita, H. Y. Hwang, and K. A. Moler "Direct imaging of the coexistence of ferromagnetism and superconductivity at the LaAlO3/SrTiO3 interface" *Nature Physics* **7** 2079 (2011).

3. L. Luan, T. M. Lippman, C. W. Hicks, J. A. Bert, O. M. Auslaender, J. H. Chu, J. G. Analytis, I. R. Fisher, and K. A. Moler "Local Measurement of the Superfluid Density in the Pnictide Superconductor $Ba(Fe_{1-x}Co_x)_2As_2$ across the Superconducting Dome" *Physical Review Letters* **106** 067001 (2011).

4. H. Bluhm, J. A. Bert, N. C. Koshnick, M. E. Huber and K. A. Moler, "Spinlike Susceptibility of Metallic and Insulating Thin Films at Low Temperature" *Physical Review Letters* **103** 026805 (2009).

5. H. Bluhm, N. C. Koshnick, J. A. Bert, M. E. Huber, and K. A. Moler, "Persistent Currents in Normal Metal Rings" *Physical Review Letters* **102** 136802 (2009).

6. N. C. Koshnick, M. E. Huber, J. A. Bert, C. W. Hicks, J. Large, H. Edwards, and K. A. Moler, "A terraced scanning superconducting quantum interference device with submicron pickup loops" *Applied Physics Letters* **93** 243101 (2008)

7. G. Sabouret, F. R. Bradbury, S. Shankar, J. A. Bert, and S. A. Lyon, "Signal and charge transfer efficiently of few electrons clocked on microscopic superfluid helium channels" *Applied Physics Letters* **92** 082104 (2008).

INVITED TALKS:

March 2012	American Physical Society Meeting	Boston, MA
Oct 2011	Condensed Matter Seminar at UC Davis Host: Warren Pickett	Davis, CA
Sept 2011	18th Workshop on Oxide Electronics	Napa, CA
Sept 2011	Review of Emergent Phenomena at Mott Interfaces	IBM-Almaden, CA
Aug 2011	26th International Conference on Low Temperature Physics	Beijing, China
March 2011	3rd Workshop on Nuclear and Mesoscopic Physics	East Lansing, MI
June 2008	CSIRO NanoSQUID science symposium	Sydney, Australia

CONTRIBUTED CONFERENCE TALKS:

March 2012	American Physical Society Meeting "Local imaging of the superfluid density at the LAO/STO interface as a function of gate voltage"	Boston, MA
March 2011	American Physical Society Meeting "Scanning SQUID measurements of the superconducting state of δ-doped $SrTiO_3$ heterostructures"	Dallas, TX
March 2010	American Physical Society Meeting "Scanning SQUID investigation of the suppression of superfluid density in mesoscopic superconducting rings"	Portland, OR
March 2009	American Physical Society Meeting "Zero Flux Anomaly in Mesoscopic Normal Metals"	Pittsburgh, PA
March 2008	American Physical Society Meeting "Measurement of spin susceptibility of thin films and nanoscale structures."	New Orleans, LA

TEACHING EXPERIENCE:

Sum 2010	**Teaching Assistant: Stanford University**	Stanford, CA
	Physics 50 Observational astronomy course including instructing students in the operation of 22 inch and 16 inch reflecting telescopes. Instructor: Dr. John Beck	
Spring 2008	**Teaching Assistant: Stanford University**	Stanford, CA
	Physics 108 Advance low-temperature laboratory course for undergrads. Instructor: Prof. Aharon Kapitulnik	
Fall 2006	**Teaching Assistant: Stanford University**	Stanford, CA
	Physics 61 Advanced freshman physics, mechanics and special relativity. Instructor: Prof. David Goldhaber-Gordon	
2005-06	**Shanghai High School, International Division** Shanghai, China	
	Classroom Teacher. Taught 11th grade physics, 10th grade advanced English for non-native speakers, 9th grade physics, 8th grade physics and 5th grade advance general science. Generated curriculum for 10th grade English.	

SKILLS:

Systems engineering	Experience combining mechatronics and software for precise control of sensors and actuators in an extreme operating environment. Implemented finite state machines.
Mechanical design	Experience designing mechanical assemblies in SolidWorks. Machining expertise including welding (TIG & oxy acetylene), lathe, mill, and sandcasting.
User-centered design	Need-finding, brainstorming, storyboarding, rapid prototyping, gathering user feedback, and iteratively improving on an idea.
Electronics	Analog and digital electronics, breadboard protyping, soldering.
Software	Extensive programming experience in MatLab, including implementation of control systems, data processing and presentation, and physical modeling. Some experience programming in C/C++, Java, PHP and HTML. Comfortable in a linux environment.

ACTIVETIES AND OUTREACH:

2007-Present	**Lab Tour Guide**	Center for Probing the Nanoscale
	Lead lab tours for visiting students and teachers to make science more accessible.	

Spring 2011 **Communication Workshop** Stanford University

Jan. 2011 **NINN International Winter School** Bangalore, India
A highly competitive program including a focused nanotechnology course combined with field experience in rural areas of India. Interacted with rural residents to develop a local perspective for informing future design work.

Fall 2010 **Design Thinking Bootcamp** D.School Stanford
Interdisciplinary class emphasizing application of design thinking principals in an innovative team centered environment. Pitched tested solutions to companies.

2008-2009 **Colloquia Committee Member** Stanford Physics Dept.
Part of the students hosted colloquia committee responsible for organizing and hosting the weekly physics colloquia on behalf of the physics students.

Sum. 2009 **Introduction to Design Thinking** D.School Stanford
Participated in an intensive week long program to incorporate design thinking and innovation into other fields.

Sum. 2009 **Leadership workshop** Stanford University

2007-2008 **Science Tutor** East Palo Alto, CA
Science Bus after school program at East Palo Alto Charter School.

Sum. 2007 **Instructor** Center for Probing the Nanoscale
Helped organize and taught at the CPN Summer Institute for Middle School Teachers.

Sum. 2007 **Instructor** Center for Probing the Nanoscale
Helped organize and taught at the CPN workshop for teachers and students from the National Hispanic University.

2003-2006 **Science and Math Tutor** Princeton, NJ and Shanghai, China
Tutored individual students struggling in math and science after school.

2006 **Oral Science Competition Coach** Shanghai, China
Coached a team of native Chinese speakers to compete in an English oral science competition.

2001-2003 **Treasurer** Princeton University Sailing Team
Responsible for the yearly budget of $35,000 for the club sailing team.

Jan 2003 **Wilderness First Responder** Blairstown, NJ
A Wilderness Medical Associates certification course.

2001-2004 **Outdoor Action** Princeton University
Princeton's wilderness orientation program for incoming students.
2002 *Support Team:* Supported and organized freshmen wilderness orientation
2003-2004 *Leader:* Lead a group of freshmen on a weeklong wilderness orientation trip

Fall 2001 **Committee Chair** Princeton Model Congress