Patricia R. Burchat

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Education: Ph.D. in Physics, Stanford University (1986)
Thesis Topic: Decays of the τ Lepton; Advisor: Prof. Gary J. Feldman

Bachelor of Applied Science and Engineering, University of Toronto (1981)
Engineering Science

Employment History:

Sept. 2000 – present	Full Professor, Department of Physics, Stanford University
Jan. 1995 – Aug. 2000	Associate Professor, Department of Physics, Stanford University
July 1992 - Dec. 1994	Associate Professor, Department of Physics, University of California, Santa Cruz
July 1988 - June 1992	Assistant Professor, Department of Physics, University of California, Santa Cruz
Feb. 1986 - June 1988	Postdoctoral Research Physicist, Santa Cruz Institute for Particle Physics, University of California, Santa Cruz

Areas of Research: Experimental Particle Physics; Observational Cosmology (gravitational lensing)

Research:

2012-present	Large Synoptic Survey Telescope Dark Energy Science Collaboration.
2006-present	Large Synoptic Survey Telescope project.
2006-2013	Analysis of gravitational lensing in images of galaxy clusters from the Subaru Telescope
1988-present	BABAR experiment at SLAC asymmetric-energy B factory
1990~2005	E791 hadroproduction of charm hadrons at Fermilab
1987-88	Studies of search strategies for Higgs bosons at high-energy $e^+ e^-$ colliders
1987-89	SLAC Linear Collider
1982-90	Studies of the Z boson with Mark II experiment at the SLAC Linear Collider
1982-86	Mark II experiment at the PEP $e^+ e^-$ storage ring at SLAC

Selected Honors and Awards:

2012	Fellow of the American Association for the Advancement of Science
2010	Judith Pool Award for mentoring young women in science from the Northern California Chapter of the Association for Women in Science
2009	Reappointed as Sapp Family University Fellow in UG Education
2007	Walter J. Gores Award for Excellence in Teaching
2006	Gabilan Professorship
2005	Guggenheim Fellowship
2004	Sapp Family University Fellow in Undergraduate Education
2001	Fellow of the American Physical Society

1997 Dean's Award for Distinguished Teaching for the academic year 1996-97

Recent Departmental and University Service:

2012-2013
a. Undergraduate major Advisor in Physics
b. Diversity Liaison on Graduate Admissions Committee (read files of all female and URM candidates; wrote detailed nominations for candidates for H&S Fellowships)
c. Member of Undergraduate Studies Committee
d. Co-Director (with Prof. Mark Cappelli) of Engineering Physics program
e. Physics Liaison and pre-major advisor for Engineering Physics program
f. Member of Fundamental Particles and Interactions Faculty Search
g. Member of ad hoc committee to write memo to H&S describing space needs for introductory physics courses due to increase in enrollment.
h. Member of ad hoc committee to write memos to VPUE and H&S describing needs for TA support due to rising enrollment in introductory physics courses and needs for more competitive support of first-year grad students.
i. Member of ad hoc committee to meet with Registrar to discuss impact of proposed schedule changes on introductory physics courses.
j. Member of tenure evaluation committee for Risa Wechsler.

2012-2013 Served on the Advisory Board to the President.

2011-2012 Faculty lead on redesigning the Physics Web site, now implemented in the Drupal content management system.

2007-2010 Chair of Physics Department

Recent Teaching Initiatives at Stanford:

2010-2013 Led several initiatives to address challenges related to rising enrollment in PH 40 series (introduced Physics Placement Test; reviewed and modified prereqs; worked with Office of Institutional Research to understand background and goals of students in PH 40 series; introduced PH 41A; taught PH 41; collaborated with colleagues in Psychology to research stereotype-threat interventions in PH 41).

2005-present Continue to serve as Physics liaison to Engineering Physics. Worked with administrative staff in School of Engineering to update and maintain material for the Engineering Physics major in the Course Bulletin, Engineering Handbook and on the web. Recruited new advisors.

2012-2013 Gave guest lectures in PH 294 – the TA training program.

Recent Undergraduate Advising Efforts:

2013 Attended two Majors Nights, two NSO panels, three Faculty Nights in the dorms, Sterling and Terman award lunches, SULI advising dinner, and SSEA advising lunch.

2007-2013 Organized H&S-sponsored dinner for prospective Physics, Engineering Physics and BA in Physical Sciences majors.

2007-present Continue to provide pre-major advising and on-going advising for students in Engineering Physics (~24 meetings in 2013 with prospective and declared majors).

2012/13	I held ~30 one-on-one advising meetings with my ~dozen Physics Major advisees. In addition, I held ~10 one-one-one advising meetings with physics majors who were not my formal advisees, and 20 with prospective physics majors. I held ~16 advising meetings with graduate students outside my group, prospective Stanford undergraduate and graduate students, etc.
2009-2012	Represented physics in large advising sessions during New Student Orientation.
Feb 2013	Held group advising lunch for prospective Physics and Engineering Physics majors in the Ph 40 series.
2011, 2012	Held group advising lunch for Physics and Engineering Physics majors on applying to graduate school.
2003-present	Hosted my Physics major advisees for group advising lunches ~two times each year.
2011 - 2013	Attended dinners for SULI students at SLAC to provide advising on applying to graduate programs.

Recent Graduate and Postdoc Advising:

2012/13	Primary advisor for Tomo Miyashita (graduated in 2013); Secondary Advisor for Sam Bochenhauer (defended July 2013); Secondary Advisor for Nicole Ackerman (defended October 2013); Reading committee for Peter Lewis (defended July 2013); 4th-year progress reports for Caitlin Malone, Steve Harris (on thesis committee); Chaired defense for Bryan Henderson, Psychology (2013).
2012/13	Postdoc advisor for Eugenia Puccio and Joshua Meyers.
Sept. 2013	Organized a lunch on teaching and physics education research for graduate students and postdocs in Physics and Applied Physics, with Prof. Carl Wieman.
Oct. 2013	Organized a lunch meeting on careers in data science, led by the founder of the Insight Data Science fellows progam, Jake Klamka.

Recent Professional Service:

2012/13	Chair of the National Organizing Committee for the APS Conferences for Undergraduate Women in Physics. LSST Institutional Board member LSST Executive Board member LSST Admissions Committee member LSST Publication Manager LSST Dark Energy Science Collaboration Executive Board member BABAR Publication Board member BABAR Executive Committee member Deputy Director for Kavli Institute for Particle Astrophysics and Cosmology (KIPAC) Member of KIPAC Strategic Planning Committee; chair of OIR subgroup Member of KIPAC Executive Committee Member of "arm-twisting" committee for search for new NSF Physics Director.

Regular reviewer of grant proposals, journal articles, etc.

Recent Presentations:

October 2013	Invited spearker at TEDx Jamaica conference in Kingston, Jamaica.
July 2013	Gave presentation to local high school science teachers in program run by the Stanford Office of Science Outreach.
Nov. 2011	Gave presentation at TEDx Youth in Palo Alto.
Nov. 2011	Gave an invited public lecture and colloquium at University of Victoria as Landsedowne Lecturer.
2004-12	Stanford Summer Engineering Academy (SSEA) physics module; provide advising on physics courses.

Other Recent Education, Advising and Outreach Activities:

2012-2013	As Chair of the National Organizing Committee for the Conferences for Undergraduate Women in Physics, led the writing of multi-year proposals to the NSF and DOE for support of the conferences, led the development of an extensive working wiki for conference organizers, and organized and chaired monthly meetings of the National Organizing Committee, attended by members from each Local Organizing Committee.
2009-2012	Ran one or two training sessions each year for volunteer teachers (mostly Stanford undergraduates and graduates) for ESP Splash! outreach program for ~500 (and rising) high school students on a Saturday.

Recent Successful Funding Proposals:

2011	Collaborative proposal to the NSF for support of the Conferences for Undergraduate Women in Physics
2010	Grant from France-Stanford Center for Interdisciplinary Studies for a Dark Energy Workshop at Stanford.
2009	Research Award, National Science Foundation (3 years).
2009	Hoagland Award for Innovations in Undergraduate Teaching.

Other recent funding proposals:

Oct 2012	Proposal to the NSF for support of research in observational cosmology; declined but encouraged to resubmit in 2013.
June 2013	Multi-year proposal to the NSF for support of the APS Conferences for Undergraduate Women in Physics (pending).

Publications:

1. Weighing the Giants I: Weak Lensing Masses for 51 Massive Galaxy Clusters – Project Overview, Data Analysis Methods, and Cluster Images, A. von der Linden, *M.T. Allen*, D.E. Applegate, P.L. Kelly, S.W. Allen, H. Ebeling, *P.R. Burchat*, D.L. Burke, D. Donovan, R.G. Morris, R. Blandford, T. Erben, A. Mantz, accepted for publication in Monthly Notices of the Royal Astronomical Society (MNRAS). (arXiv:1208.0597 [astro-ph])

2. Weighing the Giants II: Improved Calibration of Photometry from Stellar Colors and Accurate Photometric Redshifts, P.L. Kelly, A. von der Linden, D.E. Applegate, *M.T.*

Allen, S.W. Allen, *P.R. Burchat*, D.L. Burke, H. Ebeling, P. Capak, Oliver Czoske, D. Donovan, A. Mantz, R.G. Morris, accepted for publication in MNRAS. (arXiv:1208.0602 [astro-ph])

3. Weighing the Giants III: Methods and Measurements of Accurate Galaxy Cluster Weak-Lensing Masses, D.E. Applegate, A. von der Linden, P.L. Kelly, *M.T. Allen*, S.W. Allen, *P.R. Burchat*, D.L. Burke, H. Ebeling, A. Mantz, R.G. Morris, accepted for publication in MNRAS. (arXiv:1208.0605 [astro-ph])

My other publications during academic year 2012/13 were with the BABAR Collaboration. We submitted ~25 journal papers to the APS journals (Physical Review Letters or Physical Review D) between September 1, 2012 and August 31, 2013. See http://www.slac.stanford.edu/BFROOT/www/pubs/babarpubs.html. Due to the very thorough internal review process within BABAR, essentially all papers that we submit are accepted after no more than one iteration with the editor or referee(s).

To view a list of all articles published in refereed journals in 2012 or later, go to the SPIRES web site at http://www.slac.stanford.edu/spires/ and enter
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