

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

Area of Research: Experimental Particle Physics

Research Experience:

2006-present	Large Synoptic Survey Telescope project
1988-present	BABAR experiment at SLAC asymmetric-energy B factory
1990-present	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 (SLC)
1982-90	Studies of the Z boson with Mark II experiment at the SLC
1982-86	Mark II experiment at the PEP e^+e^- storage ring at SLAC

Recent Honors and Awards:

2006	Gabilan Professorship (Endowed Chair)
2005	Guggenheim Fellow
2004	Sapp Family University Fellow in Undergraduate Education
2001	Fellow of the American Physical Society
1998-99	American Physical Society Centennial Speaker
1997	Dean's Award for Distinguished Teaching for the academic year 1996-97

Recent Departmental and University Service:

- AY2006/07 Associate Chair of Physics Department
Member of Senate of the Academic Council
Member of the Advisory Board
- 2006 H&S Dean Search Committee
- 2001-2005 Director of Undergraduate Studies, Department of Physics
- 2002-2005 Member of Stanford University Faculty Senate
- 2004-2005 Search Committee for experimental astrophysics
- 2005 Tenure Promotion Committee
- 2005 H&S Dean's Advisory Group to choose new Assoc. Dean for Physical Sciences
- 2005 H&S Dean's Advisory Group to choose new Sr. Assoc. Dean for Grad/UG Studies
- 2004-2005 Committee on Committees (liaison to Committee on Admissions and Financial Aid)
- 2004-2005 Adhoc reviewer for H&S Appointment and Promotions Committee
- Fall 2004 H&S Undergraduate Curriculum Committee (sub for Doug Osheroff)
- 2003-2004 Promotion Committee
- 2003-2004 Search Committee for theoretical astrophysics
- 2002-present Senior Faculty Mentor for one Assistant Professor
- 2001-2004 Ombudsperson to Graduate Students in Physics Department
- 2002-2003 Member of the Faculty Senate Committee on Committees
- 2002-2003 Search Committee for Assistant Dean for Multicultural Affairs
- 2002-2003 Member of Longterm Planning Committee for Physics Department
- 2002-2003 Ad hoc member of A&P Committee for H&S
- 2002-2003 Search Committee for UG and Grad Studies Coordinators in Physics Dept.
- 2002-2003 Gave two lunch-time presentations to Society of Physics Students
- 2002-2003 Served on faculty Search Committee at SLAC
- 2001-2002 Speaker in Stanford Campaign for Undergraduate Education
- 2001-2002 Search Committee for Dean of Humanities and Sciences
- 2001-2002 Appointments and Promotions Committee, School of Humanities and Sciences
- 2001-2004 Speaker in "Classes without Quizzes" series for Stanford Alumni

Teaching Initiatives at Stanford:

- 2005/2006 Worked with Associate Dean Brad Osgood in the School of Engineering to introduce a new Engineering major: Engineering Physics.
- Summer 05 Initiated a series of interactive tutorials for BABAR graduate students called "Everything you should know before defending your thesis". After giving six tutorials myself, I recruited other faculty and physics staff to give 2-4 tutorials each in the series. Attendance at these tutorials has ranged from 20 to 52 graduate students.
- 2005 As chair of the Undergraduate Studies Committee in Physics, restructured the

- calculus-based introductory physics sequences.
- Winter 2005 Introduced “MasteringPhysics”, a web-based Socratic method tutorial system in Physics 53.
- 10/2004 Attended workshop on teaching introductory calculus-based physics sponsored by the American Association of Physics Teachers and the American Physical Society.
- Winter 2004 Taught Physics 53 for first time (220 students; introductory calculus-based physics). Used “active learning” techniques in classroom. Led a small committee in the selection of a textbook based on physics education research to use in 2004/2005.
- 2003-2004 Worked with Fred Stout (School of Education) on pre-approved Individually Designed Major Program in Teaching Physical Science. Program is now described in the Stanford Bulletin (e.g., p. 520 of 2004-05 edition) and on the web.
- 1998, 1999, 2001, 2004 Taught in Stanford Sophomore College: *The Elementary Particles and Their Fundamental Interactions*
- 1997 Developed and taught Physics 41N - *Mechanics Freshman Seminar*
- 1996-1999 Codeveloper and instructor in Science, Math and Engineering Core Course SME3 - *Light in the Physical and Biological Worlds*
- 1995 Developed and organized Physics 59 - *Current Research Topics*

Professional Service:

- 2006 Internal KIPAC Review Committee
- 2005, 2006 Advisory Committee for selecting invited speakers for DPF sessions at APS April mtg.
- 2005 Served on BABAR’s “Physics Reach” task force to define physics goals through the end of BABAR’s program.
- 2004, 2005 Chaired Director’s Review of LBNL’s Physics Division.
- 2003-2004 Member of Particle Physics Project Prioritization Panel.
- 2003-2004 SLAC Scenarios Study (longterm planning). Organized *Neutrino Day* on 04/18/04.
- 2004 Elected member of the BABAR Executive Board.
- 05/2004 Review of Princeton Physics Department.
- 11/2003 Director’s Review of LBNL Physics Division.
- 05/2004 Co-organizer of Workshop on Heavy Quark and Exotics Spectroscopy.
- 2003/2004 Coconvener of BABAR Pentaquark Task Force.
- Ongoing Reviewer of research proposals for NSF, DOE, Research Corporation and NSERC (Canada).
- Ongoing Referee of papers for the APS journals Phys. Rev. Letters and Phys. Rev. D.
- May 2002 Invited plenary speaker at meeting of the Division of Particles and Fields of APS.
- 2002-2003 Deputy Chair of the BABAR Publications Board.
- 2001-2002 Chair of the BABAR Publications Board.
- 1994-present Coauthor of the Review of Particle Physics by the Particle Data Group.
- 1999-2000 Physics Analysis Coordinator for the BABAR Collaboration.
- 1998-1999 Member of American Physical Society “Public Faces of Physics” Program.

- 1998-1999 Deputy Physics Analysis Coordinator for the BABAR Collaboration.
- 1998 Member of NSF Special Emphasis Subpanel on B Physics.
- 1996-1999 Member of the Executive Committee of the Division of Particles and Fields of the American Physical Society.
- 1996-2000 Member of the SLAC Scientific Policy Committee.
- 1996-1997 Stanford University Fellow.
- 1994 Member of the *Future Vision Subpanel* (chaired by Sidney Drell) of the High Energy Physics Advisory Panel for the Department of Energy.
- 1991-1993 Member of the SLAC Experimental Program Advisory Committee.
- 1990-1993 Member of the SLAC Users Organization Executive Committee.

Recent Outreach and Diversity Efforts:

- April 2006 “Title IX Think Tank” at Stanford University
- 2004,05,06 Stanford Summer Engineering Academy
- 06/15/05 Inaugural speaker in Stanford Summer Science Lecture Series celebrating the International Year of Physics; sponsored by Stanford Continuing Studies and Stanford Office of Science Outreach.
- 2005, 2006 Gave noon-time Career Talk to students at Gunn High School.
- 2002-2005 Member of joint Stanford/SLAC Quarknet team to work with high-school teachers (sponsored by DOE). Hosted two-day workshop for ~20 teachers in physics department June 2003; presented three interactive lectures; organized tours of campus laboratories.
- 2001-present Science Fair Judge for local middle schools. Recruited about a dozen graduate students to serve as judges in Feb 2004, 2005, 2006 at Terman Middle School.

Grants:

- 2005 Guggenheim Fellowships (for support during academic year 2005/06)
- 2004 Research Award, National Science Foundation (3 years)
- 2003 DOE Advanced Detector Research Award
- 2001 Research Award, National Science Foundation (3 years)
- 1999 Research Award, National Science Foundation (2 years)
- 1999 National Science Foundation POWRE Award (1 year)
- 1997 High-Speed Scientific and Engineering Computing, Intel (3 years)
- 1996 Instructional Grant, National Science Foundation (3 years)
- 1996 Academic Research Infrastructure Award, National Science Foundation (3 years)
- 1996 Research Award, National Science Foundation (3 years)
- 1993 Research Grant from SLAC to develop silicon detectors for the B Factory
- 1991 Presidential Young Investigator Award, National Science Foundation (5 years)
- 1991 Research Initiation Award, National Science Foundation (3 years)
- 1991 Pretenure Development Award, University of California, Santa Cruz
- 1991 Instructional Improvement Grant, University of California, Santa Cruz

Other proposals:

2001-2002 Worked with Fred Stout from the Coterminal Teaching Program to submit a proposal to the California Commission on Teacher Credentialing for a Subject Matter Program in Physics and General Science. Program was approved.

Recent Presentations:

06/22/06 Invited talk at Galapagos World Summit on Physics Beyond the Standard Model.
2004,05,06 Stanford Summer Engineering Academy (SSEA) physics module *
06/15/05 Inaugural speaker in Stanford Summer Science Lecture Series celebrating the International Year of Physics; sponsored by Stanford Continuing Studies and Stanford Office of Science Outreach.
05/25/05 Keynote Speaker at Science Awards Night at Palo Alto High School
04/16/05 Invited Plenary Talk at APS April meeting: Mysteries of Heavy Flavors
11/13/05 Proposal to Particle Data Group Collaboration to modify method for encoding branching fractions for multibody charm decays (proposal was accepted)
11/07/04 Keynote Speaker at Conference of Canadian Society of Physics Students
2003,04,06 *Classes without Quizzes* for Stanford Alumnae
10/20/04 Seminar on Pentaquarks at UC Irvine
07/29/04 Physics Summer Research College seminar
07/13/04 Science Undergraduate Laboratory Internship (SULI) lecture (SLAC/DOE program) *
03/23/04 Harvey Mudd College Physics Colloquium
11/16/03 Caltech Physics Colloquium

*The SULI and SSEA programs are aimed at underrepresented groups in science and engineering.

Other:

04/15/05 Attended Workshop for Senior Female Physics Faculty at April APS meeting, sponsored by NSF and the APS Committee on the Status of Women in Physics.
2003,04,05 Hosted a dinner for a pair of Stanford University trustees and ~12 students in my home.