

Byron J. Philhour

Curriculum Vitae

<http://www.siprep.org/faculty/bphilhour>

Education

- Ph.D. *California Institute of Technology*, 2002, Physics
Advisor: Professor Andrew E. Lange
Thesis: "Measurement of the Polarization of the Cosmic Microwave Background"
- A.B. *University of California at Berkeley*, 1995, Physics, High Honors
Advisors: Professors Robert P. Lin and Steven E. Boggs
Thesis: "Radioactive Background Reduction in Astrophysical Gamma-Ray Detectors"

Teaching, Research, and Mentoring Experience

- 2007 – present Science Department Chair, *St. Ignatius College Preparatory*
- 2003 – present Science Teacher, *St. Ignatius College Preparatory*
- 2001 – 04 Adjunct Instructor, Astronomy Department, *City College of San Francisco*
- 2001 – 03 Adjunct Lecturer, Physics and Astronomy Department, *San Francisco State University*
- 2001 – 03 Volunteer, Project Astro, *Astronomical Society of the Pacific*
- 2000 – 01 Visiting Researcher, Physics Department, *Stanford University*
- 1997 – 99 Resident Advisor, Dabney House, *Caltech*
- 1995 – 02 Graduate Student Research Assistant, Physics Department, *Caltech*
- 1998 – 00 Co-coordinator, Pasadena chapter, *East Timor Action Network*
- 1996 – 97 Teaching Assistant, Physics Department, *Caltech*
- 1993 – 95 Undergraduate Research Assistant, Space Sciences Laboratory, *UC Berkeley*

Teaching Interests

"Backward design" of curriculum; hands-on work by students with source materials in authentic situations; novel assessment and grading techniques; collaborative research projects; multimedia presentation; community interaction and outreach; collaborative teaching techniques; laboratory design; college and career counseling; staff professional development; high school colloquia and seminars; computer-based instruction; new technologies; computer programming curricula; educational data analysis

Research Experience

Observational cosmology; measurement and interpretation of primordial cosmic microwave background (CMB) anisotropies; CMB polarization; the Sunyaev-Zel'dovich effect in galaxy clusters; design and development of millimeter-wave & infrared optics and detectors; radio astronomy; polarimetry; cryogenic techniques & instrumentation; mechanical cryocoolers; low-noise & cryogenic electronics

Fellowships & Awards

- 2009 Amgen Award for Science Teaching Excellence (AASTE)
- 1995 – 99 National Science Foundation Graduate Student Fellow
- 1997 Award for Excellence in Teaching, Honorary Mention, Associated Students of the California Institute of Technology

References

Sarah Church, Ph.D., Professor of Physics, *Stanford University*
Stephen Phelps, Ed.D., President, *Bishop O'Dowd High School*
James Dann, Ph.D., Science Teacher, *Menlo School*

Selected Publications

The People's Physics Book, SI Edition <http://www.siprep.org/science/physics/PPB.cfm>

Asking Kids to Look at the Sky and Wonder, B.J. Philhour, *Genesis IV: The Alumni Magazine of Saint Ignatius College Preparatory* (2004)

Simulations of Pulse Shape Discrimination (PSD) Techniques for Background Reduction in Germanium Detectors, B.J. Philhour, S. E. Boggs, R. Campbell, P. T. Feffer, R. P. Lin, S. McBride, J. H. Primbsch, S. Slassi-Sennou, C. P. Cork, F. S. Goulding, P. N. Luke, N. W. Madden, D. F. Malone, and R. H. Pehl, *Nuclear Instruments and Methods A* 403, 136 (1997).

Closed-cycle Cooling of Infrared Detectors to 250 mK, R.S. Bhatia, S.T. Chase, W.C. Jones, B.G. Keating, A.E. Lange, P.V. Mason, B.J. Philhour, and G. Sirbi, accepted by *Cryogenics* (2002).

A Three-stage Helium Sorption Refrigerator for Cooling of Infrared Detectors to 280 mK, Bhatia, R.S., S.T. Chase, S.F. Edgington, J. Glenn, W.C. Jones, A.E. Lange, B. Maffei, A.K. Mainzer, P.D. Mauskopf, B.J. Philhour and B.K. Rownd, *Cryogenics*, Vol. 40 No. 11, 685-691 (2001).

A Determination of the Hubble Constant Using Measurements of X-ray Emission and the Sunyaev-Zeldovich Effect at Millimeter Wavelengths in the Cluster Abell 1835, P.D. Mauskopf, P.A.R. Ade, S.W. Allen, S.E. Church, A.C. Edge, K.M. Ganga, W.L. Holzappel, A.E. Lange, B.K. Rownd, B. Philhour, and M.C. Runyan, *Astrophysical Journal*, 538, 505-516, Part 1 (2000).

A 96 GHz Ortho-Mode Transducer for the Polatron, G. Chattopadhyay, B.J. Philhour, J.E. Carlstrom, S. Church, A. Lange, and J. Zmuidzinias, *IEEE Microwave and Guided Wave Letters*, 8:(12) 421 (1998).

Observations of the Sunyaev-Zel'dovich Effect at Millimeter Wavelengths from the Caltech Submillimeter Observatory, S.E. Church, B.J. Philhour, M.C. Runyan, A.E. Lange, P.A.R. Ade, R. Nartallo, W.L. Holzappel, and P.D. Mauskopf, *ESA Symposium*, ESA SP -401, 169 (1997).

A Compact High-Efficiency Feed Structure for Cosmic Microwave Background Astronomy at Millimeter Wavelengths, S.E. Church, B.J. Philhour, A.E. Lange, P.A.R. Ade, B. Maffei, R. Nartallo-Garcia, and M. Dragovan, *ESA Symposium*, ESA S P -388, 77 (1996).

Laboratory Tests and Simulations of PSD Techniques for Background Reduction in Germanium Gamma-ray Detectors, S. A. Slassi-Sennou, S. E. Boggs, B.J. Philhour, R. Campbell, P. T. Feffer, R. P. Lin, S. McBride, H. J. Primbsch, C. P. Cork, F. S. Goulding, P. N. Luke, N. W. Madden, D. F. Malone, and R. H. Pehl, *SPIE Proc.* 2806, 483 (1996).