

Adrian C. Pope

Institute for Astronomy, 2680 Woodlawn Dr., Honolulu, HI 96822, USA
Email: pope@ifa.hawaii.edu • *Office:* (808) 956-2416 • *Fax:* (808) 988-2790

Education

Ph.D. Physics & Astronomy, November 2005

Johns Hopkins University, Baltimore, MD

Thesis: *Precision Cosmology from Large-Scale Galaxy Clustering with the Sloan Digital Sky Survey*

Advisor: Professor Alexander Szalay

M.A. Physics & Astronomy, May 2003

Johns Hopkins University, Baltimore, MD

B.S. Physics, December 1998

Carnegie Mellon University, Pittsburgh, PA

Summa Cum Laude & University Honors

Honors and Awards

- National Science Foundation Graduate Student Research Fellowship, 1999-2002
- George Owen Fellow, Johns Hopkins University, 1999-2002
- Richard E. Cutkosky Alumni Award (Outstanding CMU Physics Senior), 1999
- Barry M. Goldwater Scholarship, 1998
- Andrew Carnegie Society Scholar, Carnegie Mellon University, 1998
- Phi Beta Kappa, 1998 (early induction)
- Phi Kappa Phi, 1999
- Sigma Xi, 1998
- National Merit Scholarship, 1995-1996

Professional Memberships

- American Astronomical Society
- Sloan Digital Sky Survey, Builder

Research

Graduate Research Assistant, *Johns Hopkins University, 1999-2005*

Advisor: Professor Alexander Szalay

• Cosmological parameter estimation from eigenmode analysis of the three-dimensional power spectrum of density fluctuations with Sloan Digital Sky Survey galaxy redshifts. Implementation of optimizations of the linear Karhunen-Loève eigenmode technique resulting in roughly three orders of magnitude improvement in performance over initial implementation. Application to the SDSS Main Galaxy Sample. Implementation of data processing methods within relational databases. Implementation of Monte Carlo techniques in database clusters for studying systematic survey effects on galaxy clustering analyses.

• Target selection and spectroscopic tiling database schema design for the Sloan Digital Sky Survey Catalog Archive Server. Modifications to include sufficient information in the public releases of SDSS data in order to calculate an angular completeness map for large scale structure studies. Assistance in development of software within relational databases to calculate the relationships between geometrical survey objects in order to simplify the representation of angular completeness maps and select subsamples of SDSS data suitable for large scale structure analyses.

Sloan Digital Sky Survey Spectroscopic Commissioning, *1999-2000*

Various responsibilities both as a full-time employee at Carnegie Mellon University working with Professor Robert Nichol and as a graduate student at Johns Hopkins University working with Professor Andrew Connolly at the University of Pittsburgh.

Assistance with camera assembly, bench testing of optical and electronic systems, calibration and observing software, observing (first extragalactic redshift with SDSS spectrographs), training.

Undergraduate Research, Carnegie Mellon University, 1998

Advisor: Professor Robert Nichol

Clusters of galaxies in the Edinburgh-Durham Southern Galaxy Catalog. Optimization and implementation of matched filter galaxy cluster finding algorithm.

Summer Undergraduate Research, Jefferson Lab, 1997

Supervisor: Dr. Bogdan Wojtsekhowski

Characterization of photomultiplier tubes to be used in detectors in fixed-target experimental hall of the electron accelerator. Experimental apparatus design, data acquisition, Monte Carlo simulation.

Computing Skills *Languages:* C/C++, Java, Fortran 77, Python

Scripting: Tcl, csh, bash, DOS

Typesetting: L^AT_EX, HTML

Mathematics: Mathematica, Matlab, LAPACK/BLAS

Databases: MS SQL Server (Transact-SQL), MySQL

Systems: UNIX/Linux, Windows, Mac OS

Graphics: OpenGL

Astronomy: CFITSIO, HTM (Hierarchical Triangular Mesh)

Experience: numerical optimization, signal processing, large linear systems, spatial indexing, database schema design, calculations within databases, distributed database systems, reduction pipelines, control systems, image processing

Selected Presentations

Cosmological Parameters from SDSS Galaxy Clustering. Invited talk, 28th Johns Hopkins Workshop on Current Problems in Particle Theory: Hyperspace, Superspace, Theoryspace, and Outer Space. Johns Hopkins University, Baltimore, MD. June 2004.

Cosmological Parameters from SDSS Galaxy Clustering. Plenary science talk, Sloan Digital Sky Survey Collaboration Meeting. New Mexico State University, Las Cruces, NM. March 2004.

Large-Scale Power and Cosmology with the SDSS. Invited talk, Aspen Winter Conference: The Large-Scale Distribution of Mass & Light in the Universe. Aspen Center for Physics, Aspen, CO. January 2004.

Cosmological Parameter Estimation from LRG Clustering. Invited talk, Special session on Large Scale Structure with the SDSS, 200th American Astronomical Society Meeting. Albuquerque, NM. June 2002.

Publications (Significant Contribution)

Pope, A. C., et al. 2004, *Cosmological Parameters from Eigenmode Analysis of Sloan Digital Sky Survey Galaxy Redshifts*, ApJ, 607, 655

Matsubara, T., Szalay, A. S., & **Pope, A. C.** 2004, *Eigenmode Analysis of Galaxy Distributions in Redshift Space*, ApJ, 606, 1

Wake, D. A., et al. 2004, *The Clustering of Active Galactic Nuclei in the Sloan Digital Sky Survey*, ApJ, 610, L85

Szalay, A. S., et al. 2003, *Karhunen-Loève Estimation of the Power Spectrum Parameters from the Angular Distribution of Galaxies in Early Sloan Digital Sky Survey Data*, ApJ, 591, 1

Castander, F. J., et al. 2001, *The First Hour of Extragalactic Data of the Sloan Digital Sky Survey Spectroscopic Commissioning: The Coma Cluster*, AJ, 121, 2331

Bramel, D. A., Nichol, R. C., & **Pope, A. C.** 2000, *The Local Space Density of Optically Selected Clusters of Galaxies*, ApJ, 533, 601

**Other
Publications**

Tegmark, M., et al. 2004, *Cosmological parameters from SDSS and WMAP*, Phys.Rev.D, 69, 103501

Tegmark, M., et al. 2004, *The Three-Dimensional Power Spectrum of Galaxies from the Sloan Digital Sky Survey*, ApJ, 606, 702

Zehavi, I., et al. 2002, *Galaxy Clustering in Early Sloan Digital Sky Survey Redshift Data*, ApJ, 571, 172

Schneider, D. P., et al. 2002, *The Sloan Digital Sky Survey Quasar Catalog. I. Early Data Release*, AJ, 123, 567

Stoughton, C., et al. 2002, *Sloan Digital Sky Survey: Early Data Release*, AJ, 123, 485

Vanden Berk, D. E., et al. 2001, *Composite Quasar Spectra from the Sloan Digital Sky Survey*, AJ, 122, 549

Blanton, M. R., et al. 2001, *The Luminosity Function of Galaxies in SDSS Commissioning Data*, AJ, 121, 2358

Richards, G. T., et al. 2001, *Colors of 2625 Quasars at $0 < Z < 5$ Measured in the Sloan Digital Sky Survey Photometric System*, AJ, 121, 2308

York, D. G., et al. 2000, *The Sloan Digital Sky Survey: Technical Summary*, AJ, 120, 1579