

## CURRICULUM VITAE

**David M. Wittman**

519 Physics/Geology  
University of California, Davis  
Davis, CA 95616  
Voice 530-754-5354; FAX 530-752-4717  
dwittman@physics.ucdavis.edu

### EMPLOYMENT

- 2006—present** Assistant Professor of Physics, University of California, Davis.  
**2004—2006** Assistant Research Physicist, University of California, Davis.  
**1997—2004** Member of Technical Staff, Bell Laboratories, Lucent Technologies (this is the title given to permanent researchers at Bell Labs). Conducted and published research in astrophysics and cosmology.

### EDUCATION

- 1997** PhD, Astronomy, University of Arizona  
**1990** AB cum laude, Physics, Harvard University

### PROFESSIONAL SOCIETIES

American Astronomical Society  
Astronomical Society of the Pacific

### RESEARCH EXPERIENCE AND INTERESTS

I am currently focused on the Deep Lens Survey (DLS), a deep optical imaging survey of 20 deg<sup>2</sup> of sky primarily for gravitational lensing, but with data made public to encourage parallel science. As Co-PI, I am deeply involved in all aspects of the survey, from planning and coordinating 120 nights of 4-meter telescope time, data processing and algorithms, to final science analysis and public data release. My main science goals with the DLS are shear-selected clusters and cosmic shear, measured as a function of redshift. I have a five-year LTSA grant for comprehensive followup of shear-selected clusters from the DLS. In addition, I am deeply involved in the proposed Large Synoptic Survey Telescope (LSST), from defining science goals to simulating datasets and developing new algorithms, and I am interested in pursuing a large optical survey in the pre-LSST time frame.

My background is in instrumentation. As a graduate student from 1990 to 1996, I built adaptive optics systems, particularly wavefront-sensing CCDs and, later, software. The AO systems yielded good imaging in the near-infrared, which I used to study Local Group galaxies. I obtained wide-field visible-wavelength imaging of Local Group galaxies to complement the NIR data, and also worked on the luminosity function of the Coma cluster. This sparked my interest in wide-field surveys and large datasets. At Bell Labs, I fed this interest first by working with the Big Throughput Camera and doing a survey which resulted in the first detection of cosmic shear, and then by undertaking the DLS.

## TEACHING EXPERIENCE AND INTERESTS

- 2007, spring** Physics 126 (upper-division cosmology).
- 2006, fall** Astronomy 10G (Stars, Galaxies, and Universe) to 180 students, mostly non-science majors. Nominated for an ASUCD Excellence in Education Award.
- 2004—present** Advising two postdocs who are new to lensing and ground-based optical observations (one is transitioning from high-energy physics to cosmology). Advising one graduate student/programmer. Co-manage one computer support person/programmer. Conduct group meetings involving these people plus additional graduate and summer students.
- 1998—2003** Mentored approximately one summer student each year, in various areas of cosmology and observational astronomy.
- 1991—1992** Graduate teaching assistant, lab session for introductory astronomy for non-science majors.

## INVITED TALKS AT SCIENTIFIC MEETINGS

- A Consumer's Guide to Future Weak Lensing Surveys*, Dark Side of the Universe '07, Minneapolis, MN, June 2007
- LSST*, Probing the Universe with Weak Lensing Surveys meeting, Marseilles, France, April 2007
- (A Consumer's Guide to) Weak Lensing Surveys*, COSMO 06, Lake Tahoe, CA, September 2006
- Statistical and Computational Challenges in Large Astronomical Surveys*, Opening Workshop, Spring 2006 Program on Astrostatistics; Statistical and Applied Mathematical Sciences Institute, Research Triangle Park, NC, January 2006
- LSST*, Workshop on Probing the Dark Universe with Subaru and Gemini, Waikoloa, HI, November 2005
- LSST Simulations*, SNAP meeting, LBNL, June 2005
- Weak Lensing with the Blanco 4-m*, Dark Energy Survey meeting, Fermilab, May 2005
- LSST Simulations: From High Redshift to the Top of the Atmosphere*, LSST Simulation Meeting, UC Davis, March 2005
- Weak Lensing Science Requirements*, LSST Science Requirements Meeting, SLAC, March 2005
- Weak Lensing Requirements on an Atmospheric Dispersion Compensator*, LSST ADC Meeting, SLAC, September 2004
- Shear-Selected Clusters from the Deep Lens Survey*, Workshop on Studies of Dark Energy and Cosmology from X-ray Cluster Surveys, Greenbelt, MD, Jan. 15, 2004
- The Large Synoptic Survey Telescope*, INPAC (Institute for Nuclear and Particle Astrophysics and Cosmology) meeting, San Diego, Oct. 4, 2003
- Shear-Selected Clusters from the Deep Lens Survey*, SLAC Summer Science Institute, Aug. 8, 2003
- Weak Lensing by Large-Scale Structures*, Princeton/PUC Dark Matter workshop, San Pedro de Atacama, Chile, July 2000

## SEMINARS, COLLOQUIA, CONTRIBUTED TALKS

- Massive Astronomy Surveys in the Next Decade*, UC Berkeley Neyman Statistics Seminar, October 10, 2007
- Cosmic Shear with the Deep Lens Survey*, Cosmology in Northern California, May 8, 2007
- Weak Lensing*, LSST All-Hands Meeting, December 4, 2006
- Large Optical Astronomy Surveys*, UC Davis Statistics Colloquium, November 30, 2006
- Shear-Selected Clusters from the Deep Lens Survey*, UC Berkeley Astrophysics Seminar, September 5, 2006
- Shear-Selected Clusters from the Deep Lens Survey*, Fermilab Astrophysics Seminar, May 22, 2006
- Weak Lensing Cosmology: Past, Present, and Future*, UC Davis Cosmology Seminar, February 21, 2006
- Shear-Selected Clusters from the Deep Lens Survey*, Stanford Linear Accelerator Center seminar, November 3, 2005
- Shear-Selected Clusters from the Deep Lens Survey*, UC Santa Cruz colloquium, April 28, 2004
- The Deep Lens Survey*, Stanford Linear Accelerator Center seminar, May 7, 2003
- The Deep Lens Survey*, UC Davis Cosmology Seminar, March 12, 2003
- The Deep Lens Survey*, Society of Photo-Optical Instrumentation Engineers, Waikoloa, HI, August 2002
- Detecting Cosmic Shear*, Stanford Linear Accelerator Center, Feb. 6, 2001
- Detecting Cosmic Shear*, Lawrence Berkeley National Laboratory, Feb. 8, 2001
- Detecting Cosmic Shear*, Rutgers University Astrophysics Seminar, March 8, 2001
- Frontiers in Weak Gravitational Lensing*, Bell Labs Physical Sciences Research Seminar, May 16, 2001
- Detecting Cosmic Shear*, Institute for Advanced Study, March 2000
- The Normal Cluster Weak Lensing Survey: Masses, Mass Profiles, and M/L Ratios of Ten Clusters at  $z \approx 0.2$* , conference on *Constructing the Universe with Clusters of Galaxies*, Paris, July 2000
- Weak Lensing with the Big Throughput Camera*, National Observatory, Rio de Janeiro, Brazil, May 4, 1999
- The Shear Correlation Function Out to 20'*, conference on *Gravitational Lensing: Recent Progress and Future Goals*, Boston University, July 28, 1999
- Big Throughput Camera: The First Year*, SPIE Conference on Large Telescopes and Instrumentation, Kona, Hawaii, March 1998
- A Hitchhiker's Guide to M33*, Lawrence Livermore National Laboratory, November 1996
- A Hitchhiker's Guide to M33*, Bell Labs, November 1996
- High-resolution infrared imaging utilizing a tip-tilt secondary mirror*, SPIE Conference on Large Telescopes and Instrumentation, Kona, Hawaii, March 1994

## PUBLIC/SCHOOL TALKS AND OUTREACH

- Coordinator for Astronomy and Solar System events at Sacramento Regional Science Olympiad, March 31, 2007
- Rutherford Elementary School, Stillwater, MN, December 19, 2006
- Patwin Elementary School, Davis, CA, Oct. 27, 2006
- Franklin Grade School, Westfield, NJ, March 30, 2004
- Science Saturday, Westfield High School, NJ, March 23, 2002
- St. Vincent de Paul School, Stirling, NJ, April 27, 2001
- Gravitational Lensing and Dark Matter*, World of Science, Murray Hill, NJ, March 31, 2001
- Roosevelt Middle School, Westfield, NJ, Jan. 11, 2001
- Science Saturday, Westfield High School, NJ, Jan. 6, 2001
- Roosevelt Middle School, Westfield, NJ, Dec. 20, 1999
- Big Throughput Camera: Window on the Universe*, Amateur Astronomers, Inc., Cranford, NJ, Dec. 18, 1998

## SERVICE

- 2006—present** Co-chair, LSST Weak Lensing Science Collaboration
- 2005—2006** Co-founder and organizer, computer science/astronomy discussion group at UC Davis
- 2005** Chair, Weak Lensing Working Group, LSST Science Requirements meeting
- 2005** Organized five talks at UC Davis by visitors/collaborators
- 2005—2006** UC Davis Academic Federation Committee on Research
- 2004—present** Served on four hiring and merit committees for UC Davis Physics Department staff
- 2000—present** Referee for publications including *Astronomy & Astrophysics*, *Astrophysical Journal*, *Astrophysical Journal Letters*, and *SIGMOD Record* (a computing journal)
- 2000—present** Deep Lens Survey public data release and support <http://dls.physics.ucdavis.edu>
- 2004—2005** represented LSST on a joint LSST/SNAP statement of complementarity
- 2001—2004** Deep Lens Survey liaison for the Hands-On Universe educational project
- 2002—2004** Member, Bell Labs Research Computing Support Committee
- 2002—2004** Founder and organizer, Bell Labs Astrophysics Journal Club
- 2002—2003** Member, LSST Data Working Group. This was an independent panel charged by NOAO to determine if and how it was feasible to manage and do science with the immensely large planned LSST dataset. Since the birth of the LSST Corporation, I have continued this work as part of the LSST project itself.
- 1999—2001** Founder and maintainer of the LSST website <http://www.lsst.org>
- 1997—2000** Observing and data reduction support for community users of the Big Throughput Camera on the Cerro Tololo Inter-American Observatory 4-m telescope

## HONORS AND AWARDS

- 2007** Nominated for Excellence in Education award sponsored by Associated Students of UC Davis.
- 1993** SPIE Scholarship in Optical Engineering (graduate)
- 1988—1990** John Harvard Scholar (undergraduate)
- 1986—1990** National Merit Scholar (undergraduate)

## PI GRANTS

- 2007—2009** From LSST Corp. for *Shear Analysis of the LSST Dataset*, \$80,000.
- 2007—2008** From Spitzer Science Center for *Shear-Selected Galaxy Clusters: Stellar Mass Content and Star Formation History*, \$49,900.
- 2007** From LSST Corp. for *Weak Lensing Computing Requirements*, \$70,000.
- 2005—2010** NNG05GD32G Long-Term Space Astrophysics (LTSA) from NASA: *Probing Dark Matter and Dark Energy with Shear-Selected Clusters of Galaxies*, \$769,544.
- 2004—2006** HST-AR-09956 from Space Telescope Science Institute: *Probing the Mass Distribution at High Redshift in the Hubble Space Telescope Ultra-Deep Field*, \$81,300.