

Dr. Michael David Schneider

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RESEARCH INTERESTS Dark energy; Gravitational lensing; Numerical simulation; Statistical modeling; Image analysis; Early universe cosmology.

CURRENT POSITION **Lawrence Livermore National Laboratory**, Research Scientist, Physics Division, 11/2012 – present

PREVIOUS EMPLOYMENT **University of California, Davis**, Large Synoptic Survey Telescope Prize Post-doctoral Fellow, 02/2012 – 11/2012

Lawrence Livermore National Laboratory, Post-doctoral Research Staff, Physics Division, 08/2010 – 11/2012

Institute for Computational Cosmology, Durham University, Post-doctoral Research Associate, 10/2008 - 08/2010

EDUCATION Ph.D. Physics, **University of California, Davis**, 2008
Advisor: Professor Lloyd Knox
Thesis: *Cosmological constraints from surveys of the weak lensing of galaxies*

M.S. Physics, **Rutgers, the State University of New Jersey**, 2005
(*advanced to Ph.D. candidacy*)

B.S. Physics, **University of Illinois at Urbana-Champaign**, 2003
with High Distinction in the curriculum

RESEARCH GRANTS Principal Investigator on LLNL Laboratory Directed Research & Development, October 2015 - September 2018.

Principal Investigator on DOE Office of Science HEP Field Work Proposal (LLNL), *Point Spread Function Modeling for Precision Weak Lensing Measurements with LSST*, May 2014 - April 2017.

Principal Investigator on LLNL Laboratory Directed Research & Development, *Measuring Dark Energy with the Large Synoptic Survey Telescope*, October 2012 - September 2015.

Principal Investigator on NASA ROSES grant, *Joint Analysis of Galaxy Imaging for Photometric Redshift Assignments in the WFIRST-AFTA Lensing Survey*, April 2015 - March 2017.

LLNL 7th Institutional Unclassified Computing Grand Challenge allocation, *Exploring Dark Energy Models through Cosmological Simulation*, FY2013.

LLNL 8th Institutional Unclassified Computing Grand Challenge allocation, *Exploring Dark Energy Models through Cosmological Simulation*, FY2014.

Co-Investigator on NASA ROSES ATP award (PI: Jason Rhodes, JPL), *Enabling Precise Measurements of Dark Energy through Numerical Simulations of Weak Gravitational Lensing*, FY14 - FY18.

2015

Schneider, Hogg, Marshall et al. 2015, ApJ

Hierarchical probabilistic inference of cosmic shear

Schneider, Hogg, Marshall, Dawson, Meyers, Bard, Lang

arXiv: 1411.2608

Mandelbaum et al. 2015, MNRAS, 450, 2963-3007

GREAT3 results I: systematic errors in shear estimation and the impact of real galaxy morphology

Mandelbaum, Rowe, Armstrong et al.

arXiv: 1412.1825

2014

Han et al. 2014, MNRAS, 446, 1356-1379

Galaxy and Mass Assembly (GAMA): The halo mass of galaxy groups from maximum-likelihood weak lensing

Han, Eke, Frenk, Mandelbaum, Norberg, Schneider, Peacock, Jing, Baldry, Bland-Hawthorn, Brough, Brown, Loveday

arXiv: 1404.6828

Schneider 2014, PRL 112, 061301

Probing Dark Energy with Lensing Magnification in Photometric Surveys

arxiv: 1401.0537

2013

Morrison & Schneider 2013, JCAP, 11 009

On estimating cosmology-dependent covariance matrices

arXiv: 1304.7789

Dodelson & Schneider 2013, PRD, vol. 88, issue 6

The Effect of Covariance Estimator Error on Cosmological Parameter Constraints

arXiv: 1304.2593

Schneider et al. 2013, MNRAS 433, 2727-2738

Galaxy and Mass Assembly (GAMA):

Galaxy radial alignments in GAMA groups

Schneider, Cole, Frenk, Kelvin, Mandelbaum, Norberg, Bland-Hawthorn, Brough, Driver, Hopkins, Loveday, Robotham

arXiv: 1306.4963

Jee et al. 2013, ApJ, 765, 74

Cosmic shear results from the Deep Lens Survey - I: Joint constraints on Ω_m and σ_8 with a two-dimensional analysis

Jee, Tyson, Schneider, Wittman, Schmidt, Hilbert

arXiv: 1210.2732

2012

Schneider, Frenk, Cole 2012, JCAP 05 030

The shapes and alignments of dark matter halos

arXiv: 1111.5616

Schneider et al. 2012, ApJ, 750, 154
Foreground predictions for the cosmic microwave background power spectrum from measurements of faint inverted radio sources at 5 GHz
Schneider, Becker, de Vries, White
arXiv: 1203.3809

Schneider 2012, Advances in Space Research, 49, 4, pp. 655-666
Bayesian linking of Geosynchronous orbital debris tracks as seen by the Large Synoptic Survey Telescope
arXiv: 1111.2556

2011

Schneider et al. 2011, ApJ, 737, 11
Fast generation of ensembles of cosmological N-body simulations via mode-resampling
Schneider, Cole, Frenk, Szapudi
arXiv: 1103.2767

Kim et al. 2011, MNRAS 414, 2367-2385
The spatial distribution of cold gas in hierarchical galaxy formation models
Kim, Baugh, Benson, Cole, Frenk, Lacey, Power, Schneider arXiv: 1003.0008

Schneider, Holm, Knox 2011, ApJ, 728, 137
Intelligent Design: On the Emulation of Cosmological Simulations
arXiv: 1002.1752

2010

Elsner, Wandelt, Schneider 2010, A&A, 513, A59
Probing local non-Gaussianities within a Bayesian framework, arXiv: 1002.1713

Kirk, Bridle, Schneider 2010, MNRAS 408, 1502-1515
The impact of intrinsic alignments: Cosmological constraints from a joint analysis of cosmic shear and galaxy survey data
arXiv: 1001.3787

Schneider & Bridle 2010, MNRAS 9999, 1365-2966
A halo model for intrinsic alignments of galaxy ellipticities
arXiv: 0903.3870

2008

M. Schneider et al. 2008, PRD, vol. 78, Issue 6
Simulations and cosmological inference: A statistical model for power spectra means and covariances
Schneider, Knox, Habib, Heitmann, Higdon, Nakhleh
arXiv: 0806.1487

2006

M. Schneider et al. 2006, ApJ, 651, 14
Using Galaxy Two-Point Correlation Functions to Determine the Redshift Distributions of Galaxies Binned by Photometric Redshift
Schneider, Knox, Zhan, Connolly
arXiv: astro-ph/0606098

AWARDS AND HONORS Large Synoptic Survey Telescope Prize Post-doctoral Fellowship offer, 2011
 Excellence in Publication award, LLNL Physical and Life Sciences Directorate, 2011, 2014.
 British Council Researcher Exchange Programme award, 2007
 Richard J. Plano Outstanding Teaching Assistant Award, Rutgers Department of Physics and Astronomy, 2004
 Outstanding Senior Thesis (theory), UIUC Department of Physics, 2003

PROFESSIONAL ACTIVITIES Member of the Large Synoptic Survey Telescope Dark Energy Science Collaboration.
 – Co-convener of the Weak Gravitational Lensing Working Group.
 – Convener of San Francisco Bay Area weak lensing meetings.
 – Member of the 2015 Spokesperson Nomination Committee (6 members)
 – Active member of working groups on Large-scale Structure, Theory & Joint Probes, Computation.
 Served as LLNL institutional representative to LSST Corp.
 Member of the Dark Energy Spectroscopic Instrument (DESI) Collaboration.
 Member of a *Task Force on Simulation Supercomputing Infrastructure* for future dark energy surveys convened by DOE/NASA/NSF programs.
 Served on multiple review panels for the National Science Foundation Astronomy and Astrophysics Grants program.
 Contributing author to the 2013 USA “Snowmass process” white paper on Computational Cosmology for the U.S. high energy physics community.

SELECTED INVITED TALKS 12th Conference on the Intersection of Particle and Nuclear Physics, Vail CO, May 2015
 Stanford Cosmology Seminar, March 2015
 LLNL Applied Statistics Group Seminar, October 2014
 Joint DES-LSST Workshop, Fermilab, March 2014
 UC Davis Cosmology Seminar, January 2014
 Astrophysics seminar, NASA JPL, September 2013.
 Astronomy Seminar, Carnegie Mellon University, March 2013.
 Astronomy Seminar, University of California Irvine, November 2012.
 Cosmology Seminar, Stanford University, October 2012.
 SnowPAC 2012: Gravitational Lensing in the Age of Survey Science.
 Cosmology Seminar, University of California Santa Cruz, February 2012.

TEACHING & MENTORING EXPERIENCE Postdoc supervisor for Dr. William Dawson (LLNL), 09/2013-present
 Teaching Assistant, Introductory physics, Rutgers, Fall 2003–Spring 2005
 Teaching Assistant, “Introduction to Physics Research”, UIUC, Spring 2003