

## Dr. Douglas L. Tucker

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**EMPLOYMENT**

<b>Applications Physicist II</b>	2007 – present
Fermilab Center for Particle Astrophysics/Experimental Astrophysics Group, Fermi National Accelerator Laboratory	
<b>Applications Physicist I</b>	1996 – 2007
Experimental Astrophysics Group, Fermi National Accelerator Laboratory	
<b>Postdoctoral Researcher</b>	1994 – 1996
Leibniz-Institut für Astrophysik Potsdam, Germany (formerly Astrophysikalisches Institut Potsdam (AIP))	
<b>Research Assistant</b>	1987 – 1994
Department of Astronomy, Yale University	
<b>Teaching Assistant</b>	1988 – 1993
Department of Astronomy, Yale University	
<b>Research Assistant</b>	1987 – 1987
New College of Florida (formerly New College of USF)	

**EDUCATION**

<b>Ph.D., Astronomy, Yale University</b>	1994
• Title: An Observational Study of Galaxies and their Environment on Large Scales • Adviser: Professor Augustus Oemler, Jr.	
<b>M.Phil., Astronomy, Yale University</b>	1989
<b>M.S., Astronomy, Yale University</b>	1988
<b>B.A., Physics, New College of Florida</b> (formerly New College of USF)	1988

**PROJECTS**

**Las Campanas Redshift Survey (LCRS)** team member  
**Sloan Digital Sky Survey (SDSS) I & II** Member and Builder  
**SuperNova Acceleration Probe (SNAP)** team member  
**Blanco Cosmology Survey (BCS)** team member  
**Dark Energy Survey (DES)** Member and Builder  
**Magellanic Satellites Survey (MagLiteS)** team member

**RESEARCH INTERESTS**

Photometric Calibration of Large Surveys, Strong Gravitational Lensing, Groups of Galaxies, Observational Cosmology, Star Cluster Photometry, Dwarf Galaxies, Trans-Neptunian Objects

**COMPUTING SKILLS**

**Operating Systems:**  
Linux/UNIX, Apple OS X, VAX VMS

**Computer Programming:**  
Python, Java, UNIX shell scripting, awk, SQL, Tcl, FORTRAN

**Astronomical Software:**  
IRAF/pyraf, SExtractor, Virtual Observatory tools, ASTROTTOOLS, MTPPIPE, sdssQT, GalFit, GAIA, and others.

**SOCIETIES & ORGANIZATIONS**

American Astronomical Society Member

**Current (primary responsibilities in bold-face):**

1. **DES Calibrations Scientist: 2007–present.**
2. Organizer of DES PreCam Survey<sup>1</sup> observing and data processing: 2010–present.
3. Member of the DES Executive Committee: 2012–present.
4. Member of the DES Operations Team: 2013–present.

**Completed (primary responsibilities in bold-face):**

1. **SDSS MPIPE Coordinator: 1997–2009.**
2. Organizer of the SNAP Calibration Working Group meeting held at Fermilab, July 8-9, 2004.
3. Leader of Stripe 82 Tertiary Standards Project (SDSS Project #290), 2005–2007.
4. Fermilab Representative on the SDSS Collaboration Council: 2005–2008.
5. Co-leader of SEGUE Open Cluster Project (SDSS Project #287), 2005–2008.
6. Secretary for the Fermilab SNAP/DES group meetings 2006–2007.
7. Secretary for the DES Working Group Meetings: 2006–2007.
8. Co-leader of 8 O’Clock Arc Follow-up Project (SDSS Project #356), 2006–2013.
9. Secretary for DES Management Committee Telecons: 2007–2013.
10. Co-Chair of the Organizing Committee for the workshop, “Searching for Strong Lenses in Large Imaging Surveys,” held at Fermilab, June 14–15, 2007.
11. Chair of the Organizing Committee for the Fall 2007 SDSS Collaboration Meeting, held at Fermilab, November 1–4, 2007.
12. Chair of the Fermilab Center for Particle Astrophysics (FCPA) Visitors’ Committee: 2008–2009.
13. Organizer of the DES RASICAM review held at Fermilab, March 24, 2010.
14. Co-chair of the Local Organizing Committee and member of the Scientific Organizing Committee for the conference, “Calibration & Standardization of Large Surveys & Missions in Astronomy & Astrophysics,” which was held at Fermilab, April 16-19, 2012.
15. Member of the DES Science Verification Team: 2012–2014.

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<sup>1</sup>The PreCam Survey is a bright imaging survey in the DES footprint using DES CCDs and 100mm x 100mm DES filters on a 0.6-m telescope at CTIO in order to establish a rigid grid of calibration stars for DES. Observations for 100-night PreCam Survey occurred between August 2010 and January 2011.

### **DES Calibrations & Pipeline Development (2004–present)**

1. Developed a photometric calibration strategy for the DES (Tucker et al. 2006) (2005–present).
2. Co-wrote a pipeline (mostly in python) to process and analyze the data from the PreCam Survey (2010– present).
3. Co-wrote the PreCam Survey observing proposal, organized the PreCam Survey observing runs, helped provide technical support for PreCam observers, and observed for 32 nights of the PreCam Survey (2010-2011).
4. Wrote a suite of Java code for creating catalog-based simulations of stars within the DES and PreCam Surveys for optimizing the photometric calibrations strategy of the DES (2009–2010).
5. Prepared a functional requirements document for the DES 10-micron all-sky camera (RASICAM) (2006).
6. Wrote and maintained the Global Calibrations Module – a software module for calculating zeropoint offsets for overlapping DECam observations – for the DES Data Management (DESDM) data processing pipeline (2006–present).
7. Wrote and maintained the Photometric Standards Module – a code module for enabling the automated analysis of DES standard star observations to produce a photometric solution for a night – for the DESDM) data processing pipeline (2005–present).

### **SNAP Calibration & Simulations (2002–2008)**

1. Acted as a liaison between the SNAP Calibrations Group and the SNAP Simulations Group (2004–2007).
2. Prepared a chapter on the SNAP Calibration Pipeline for the SNAP Calibration Volume (2004–2006).
3. Co-developed a template photometric calibration plan for SNAP to serve as a basis for code development for modeling the effects of calibration errors on the the perceived filter response functions (2004).
4. Co-wrote an Exposure Time Calculator to investigate different options (ground-based, airborne, and space-based missions) for obtaining and calibrating a set of optical/near-infrared spectrophotometric standard stars for the SNAP mission (2004).
5. Wrote code within the SNAP simulations framework that, during each night’s “build” of the framework, created an updated webpage containing the current values for the SNAP filter and detector characteristics (2004).
6. Prepared observing proposals, observed candidate SNAP photometric standard stars with the Apache Point Observatory ARC-3.5m telescope, and processed and analyzed the results (2002–2004).

TECHNICAL  
ACTIVITIES  
(CONT.'D)

**SDSS Photometric Calibration Reductions (1996–2008)**

1. Built, maintained, and oversaw the running of the the “PT Factory”, the (mostly) automated framework that processed and calibrated data from the Photometric Telescope (2002–2008).
2. Maintained and upgraded the SDSS small-telescope data processing pipeline, MTIPIPE and related software products (Tucker, Kent, Richmond, et al. 2006) (1997–2008).
3. Helped in the implementation of the original SDSS Data Release 1 Data Archive Server (DAS) imaging and spectroscopic web query tools (2002-2003).
4. Provided the software support for calibrating the SDSS  $u'g'r'i'z'$  standard star network (Smith, Tucker, Kent, et al. 2002) (1997–2002).
5. Worked on the commissioning of and early observing with the replacement to the Monitor Telescope, the SDSS 0.5-m Photometric Telescope (“PT”) (1999).
6. Worked on the commissioning of and the observing with the original SDSS 0.6-m Monitor Telescope (“MT”) (1996–1998).

OBSERVING  
EXPERIENCE

1. Gemini-South 8-m telescope at Cerro Pachon, Chile
2. Blanco 4-m telescope at Cerro Tololo Interamerican Observatory (CTIO)
3. Astrophysical Research Corporation (ARC) 3.5-m telescope at Apache Point Observatory (APO)
4. NASA Infrared Telescope Facility (IRTF) 3-m telescope on Mauna Kea
5. Du Pont 2.5-m telescope at Las Campanas Observatory (LCO)
6. SMARTS 1.5-m telescope at CTIO
7. USNO 1-m telescope at Flagstaff Station
8. Swope 1-m telescope at LCO
9. SMARTS 1-m telescope at CTIO
10. Yale 0.9-m telescope at CTIO
11. Curtis-Schmidt 0.6-m/0.9-m telescope at CTIO
12. SDSS 0.6-m Monitor Telescope at APO
13. SDSS 0.5-m Photometric Telescope at APO

TEN  
CAREER-DEFINING  
PUBLICATIONS

1. Shectman S.A., Landy S.D., Oemler A., **Tucker D.L.**, Lin H., Kirshner R.P., Schechter P.L. 1996, “The Las Campanas Redshift Survey,” *The Astrophysical Journal*, 470, 172
2. **Tucker D.L.**, Oemler A., Kirshner R.P., Lin H., Shectman S.A., Landy S.D., Schechter P.L., Müller V., Gottlöber S., Einasto J. 1997, “The Las Campanas Redshift Survey Galaxy-Galaxy Autocorrelation Function,” *The Monthly Notices of the Royal Astronomical Society*, 285, 5P
3. Allam S.S., **Tucker D.L.**, Lin H., Hashimoto Y. 1999, “Star Formation in Las Campanas Compact Groups,” *The Astrophysical Journal (Letters)*, 522, L92
4. **Tucker D.L.**, Oemler A., Hashimoto Y., Shectman S.A., Kirshner R.P., Lin H., Landy S.D., Schechter P.L., Allam, S.S. 2000, “Loose Groups of Galaxies in the Las Campanas Redshift Survey,” *The Astrophysical Journal (Supplement)*, 130, 237
5. Smith J.A., **Tucker D.L.**, Kent S., et al. 2002, “The Sloan Digital Sky Survey: The  $u'g'r'i'z'$  Standard Star System,” *The Astronomical Journal*, 123, 2121<sup>2</sup>
6. Stoughton C., Lupton R. H., Bernardi M., et al. 2002, “Sloan Digital Sky Survey: Early Data Release,” *The Astronomical Journal*, 123, 485
7. Lee B. C., Allam S. S., **Tucker D. L.**, et al. 2004, “A Catalog of Compact Groups of Galaxies in the SDSS Commissioning Data,” *The Astronomical Journal*, 127, 1811
8. **Tucker D. L.**, Kent S., Richmond M. W, et al. 2006, “The Sloan Digital Sky Survey Monitor Telescope Pipeline,” *Astronomische Nachrichten*, 327, 821
9. Allam S. S., **Tucker D. L.**, Lin H., Diehl H. T., Annis J., Buckley-Geer E. J., Frieman J. A. 2007, “The 8 O’Clock Arc: A Serendipitous Discovery of a Strongly Lensed Lyman Break Galaxy in the SDSS DR4 Imaging Data, *The Astrophysical Journal (Letters)*, 662, L51
10. **Tucker D. L.**, Annis J. T., Lin H., et al. 2007, “The Photometric Calibration of the Dark Energy Survey,” in *The Future of Photometric, Spectrophotometric and Polarimetric Standardization*, ASP Conference Series, Vol.364, ed. C. Sterken, (San Francisco: Astronomical Society of the Pacific), p. 187

CITATIONS

As of late-October, 2016, the total number of citations to my publications is:

- 34,308 (according to ADS)
- 42,672 (according to Google Scholar Citations).

See also my ORCID entry at <http://orcid.org/0000-0001-7211-5729>

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<sup>2</sup>With 1246 citations, the Smith, Tucker, Kent, et al. (2002) article is the 17th most cited of all 7290 SDSS-related refereed journal articles published as of late-October 2016.

1. Kazaks P.A., **Tucker D.L.** 1988, "Geometry of Spin Effects in Proton-Proton Scattering," *Physical Review D*, 37, 222
2. Doroshkevich A.G., **Tucker D.L.**, Oemler A., Kirshner R.P., Lin H., Shectman S.A., Landy S.D., Fong R. 1996, "Large- and Superlarge-Scale Structure in the Las Campanas Redshift Survey," *The Monthly Notices of the Royal Astronomical Society*, 283, 1281
3. Hamuy M, Phillips M.M., Suntzeff N.B, et al. 1996, "BVRI Light Curves for 29 Type Ia Supernovae," *The Astronomical Journal*, 112, 2408
4. Landy S.D., Shectman S.A., Lin H., Kirshner R.P., Oemler A., **Tucker D.** 1996, "The 2-Dimensional Power Spectrum of the Las Campanas Redshift Survey: Detection of Excess Power on  $100 h^{-1}$  Mpc Scales," *The Astrophysical Journal (Letters)*, 456, L1
5. Lin H., Kirshner R.P., Shectman S.A., Landy S.D., Oemler A., **Tucker D.L.**, Schechter P.L. 1996, "The Luminosity Function of Galaxies in the Las Campanas Redshift Survey," *The Astrophysical Journal*, 464, 60
6. Lin H., Kirshner R.P., Shectman S.A., Landy S.D., Oemler A., **Tucker D.L.**, Schechter P.L. 1996, "The Power Spectrum of Galaxy Clustering in the Las Campanas Redshift Survey," *The Astrophysical Journal*, 471, 617
7. Shectman S.A., Landy S.D., Oemler A., **Tucker D.L.**, Lin H., Kirshner R.P., Schechter P.L. 1996, "The Las Campanas Redshift Survey," *The Astrophysical Journal*, 470, 172
8. Zabludoff A.I., Zaritsky D., Lin H., **Tucker D.**, Hashimoto Y., Shectman S.A., Oemler A., Kirshner R.P. 1996, "The Environment of 'E+A' Galaxies," *The Astrophysical Journal*, 466, 104
9. Einasto J., Einasto M., Gottlöber S., Müller V., Saar V., Starobinsky A.A., Tago E., **Tucker D.**, Andernach H., Frisch P. 1997, "A 120 Mpc Periodicity in the Three-Dimensional Distribution of Galaxy Superclusters," *Nature*, 385, 139
10. Einasto J., Einasto M., Frisch P., Gottlöber S., Müller V., Saar V., Starobinsky A.A., Tago E., **Tucker D.**, Andernach H. 1997, "The Supercluster-Void Network II: An Oscillating Cluster Correlation Function," *The Monthly Notices of the Royal Astronomical Society*, 289, 801
11. Einasto J., Einasto M., Frisch P., Gottlöber S., Müller V., Saar V., Starobinsky A.A., **Tucker D.** 1997, "The Supercluster-Void Network III: The Correlation Function as a Geometrical Statistic," *The Monthly Notices of the Royal Astronomical Society*, 289, 813
12. **Tucker D.L.**, Hasinger G., Lin H. 1997, "ROSAT Public PSPC Observations in the Las Campanas Redshift Survey," *Astronomische Nachrichten*, 318, 141
13. **Tucker D.L.**, Oemler A., Kirshner R.P., Lin H., Shectman S.A., Landy S.D., Schechter P.L., Müller V., Gottlöber S., Einasto J. 1997, "The Las Campanas Redshift Survey Galaxy-Galaxy Autocorrelation Function," *The Monthly Notices of the Royal Astronomical Society*, 285, 5P
14. Hashimoto Y., Oemler A., Lin H., **Tucker D.L.** 1998, "The Influence of Environment on the Star Formation Rates of Galaxies," *The Astrophysical Journal*, 499, 589

15. Allam S.S., **Tucker D.L.**, Lin H., Hashimoto Y. 1999, "Star Formation in Las Campanas Compact Groups," *The Astrophysical Journal (Letters)*, 522, L92
16. Einasto J., Einasto M., Tago E., Starobinsky A.A., Atrio-Barandela F., Müller V., Knebe A., Frisch P., Cen R., Andernach H., **Tucker D.** 1999, "Steps Toward the Power Spectrum of Matter I: The Mean Spectrum of Galaxies," *The Astrophysical Journal*, 519, 441
17. Fan X., Strauss M.A., Schneider D.P., et al. 1999, "High-Redshift Quasars Found in Sloan Digital Sky Survey Commissioning Data," *The Astronomical Journal*, 118, 1
18. Strauss M.A., Fan X., Gunn J.E., et al. 1999, "The Discovery of a Field Methane Dwarf from Sloan Digital Sky Survey Commissioning Data," *The Astrophysical Journal*, 522, 61
19. Fan X., Strauss M.A., Gunn, J.E., et al. 1999, "The Discovery of a High-Redshift Quasar without Emission Line from Sloan Digital Sky Survey Commissioning Data," *The Astrophysical Journal*, 526, 57
20. Allam S., **Tucker D.** 2000, "Compact Groups of Galaxies in the Las Campanas Redshift Survey," *Astronomische Nachrichten*, 321, 101
21. Fan X., Knapp G.R., Strauss M.A., et al. 2000, "L Dwarfs Found in Sloan Digital Sky Survey Commissioning Imaging Data," *Astronomical Journal*, 119, 928
22. Fan X., Strauss M.A., Schneider, et al. 2000, "High-Redshift Quasars Found in Sloan Digital Sky Survey Commissioning Data. II. The Spring Equatorial Stripe," *Astronomical Journal*, 119, 1
23. Müller V., Arbabi-Bidgoli S., Einasto J., **Tucker D.** 2000, "Voids in the Las Campanas Redshift Survey versus Cold Dark Matter Models," *The Monthly Notices of the Royal Astronomical Society*, 318, 280
24. Schneider D.P., Hill G.J., Fan X., et al. 2000, "The Low-Resolution Spectrograph of the Hobby-Eberly Telescope. II. Observations of Quasar Candidates from the Sloan Digital Sky Survey," *Publications of the Astronomical Society of the Pacific*, 112, 6
25. Sowards-Emmerd D., Smith J.A., McKay T.A., Sheldon E., **Tucker D.L.**, Castander F.J. 2000, "A Catalog of Photometry for Las Campanas Redshift Survey Galaxies on the Sloan Digital Sky Survey System," *Astronomical Journal*, 119, 2598
26. **Tucker D.L.**, Oemler A., Hashimoto Y., Shectman S.A., Kirshner R.P., Lin H., Landy S.D., Schechter P.L., Allam, S.S. 2000, "Loose Groups of Galaxies in the Las Campanas Redshift Survey," *The Astrophysical Journal (Supplement)*, 130, 237
27. York D.G., Adelman J., Anderson J.E., et al. 2000, "The Sloan Digital Sky Survey: Technical Summary," *The Astronomical Journal*, 120, 1579
28. Blanton M., Dalcanton J., Eisenstein D., et al. 2001, "The Luminosity Function of Galaxies in the SDSS Commissioning Data," *The Astronomical Journal*, 121, 2358
29. Doroshkevich A.G., **Tucker D.L.**, Fong R., Turchaninov V., Lin H. 2001, "Large Scale Galaxy Distribution in the Las Campanas Redshift Survey," *The Monthly Notices of the Royal Astronomical Society*, 322, 369

30. Eisenstein D., Annis J., Gunn J. E., et al. 2001, "Spectroscopic Target Selection for the Sloan Digital Sky Survey: The Luminous Red Galaxy Sample," *The Astronomical Journal*, 122, 2267
31. Lee B. C., **Tucker D. L.**, Vanden Berk D. E., et al. 2001, "Sloan Digital Sky Survey Multicolor Observations of GRB 010222," *The Astrophysical Journal*, 561, 183
32. Smith J.A., **Tucker D.L.**, Kent S., et al. 2002, "The Sloan Digital Sky Survey: The  $u'g'r'i'z'$  Standard Star System," *The Astronomical Journal*, 123, 2121
33. Stoughton C., Lupton R. H., Bernardi M., et al. 2002, "Sloan Digital Sky Survey: Early Data Release," *The Astronomical Journal*, 123, 485
34. Goto T., Sekiguchi M., Nichol R. C., et al. 2002, "The Cut-and-Enhance Method: Selecting Clusters of Galaxies from the Sloan Digital Sky Survey Commissioning Data," *The Astronomical Journal*, 123, 1807
35. Szapudi I., Frieman J. A., Scoccimarro R., et al. 2002, "Higher Order Moments of the Angular Distribution of Galaxies from Early Sloan Digital Sky Survey Data," *The Astrophysical Journal*, 570, 75
36. Zehavi I., Blanton M. R., Frieman J. A., et al. 2002, "Galaxy Clustering in Early Sloan Digital Sky Survey Redshift Data," *The Astrophysical Journal*, 571, 172
37. Tegmark M., Dodelson S., Eisenstein D. J., et al. 2002, "The Angular Power Spectrum of Galaxies from Early Sloan Digital Sky Survey Data," *The Astrophysical Journal*, 571, 191
38. Park H. S., Williams G. G., Hartmann D. H., et al. 2002, "LOTIS, Super-LOTIS, Sloan Digital Sky Survey, and Tautenburg Observations of GRB 010921," *The Astrophysical Journal (Letters)*, 571, L131
39. Dodelson S., Narayanan V. K., Tegmark M., et al. 2002, "The Three-dimensional Power Spectrum from Angular Clustering of Galaxies in Early Sloan Digital Sky Survey Data," *The Astrophysical Journal*, 572, 140
40. Vanden Berk D. E., Lee B. C., Wilhite B. C., et al. 2002, "SDSS J124602.54 + 011318.8: A Highly Luminous Optical Transient at  $z = 0.385$ ," *The Astrophysical Journal*, 576, 673
41. Connolly A. J., Scranton R., Johnston D., et al. 2002, "The Angular Correlation Function of Galaxies from Early Sloan Digital Sky Survey Data," *The Astrophysical Journal*, 579, 42
42. Scranton R., Johnston D., Dodelson S., et al. 2002, "Analysis of Systematic Effects and Statistical Uncertainties in Angular Clustering of Galaxies from Early Sloan Digital Sky Survey Data," *The Astrophysical Journal*, 579, 48
43. Heinämäki P., Einasto J., Einasto M., Saar E., **Tucker D. L.**, Müller V. 2003, "The mass function of the Las Campanas loose groups of galaxies," *Astronomy & Astrophysics*, 397, 63
44. Einasto M., Einasto J., Müller V., Heinämäki P., **Tucker D. L.** 2003, "Environmental enhancement of loose groups around rich clusters of galaxies," *Astronomy & Astrophysics*, 401, 851
45. Einasto J., Hütsi G., Einasto M., Saar E., **Tucker D. L.**, Müller V., Heinämäki P., Allam S. S. 2003, "Clusters and superclusters in the Sloan Digital Sky Survey," *Astronomy & Astrophysics*, 405, 425



46. Einasto M., Jaaniste J., Einasto J., Heinämäki P., Müller V., **Tucker D. L.** 2003, “Las Campanas Loose Groups in the supercluster-void network,” *Astronomy & Astrophysics*, 405, 821
47. Szalay A. S., Jain B., Matsubara T., et al. 2003, “Karhunen-Loève Estimation of the Power Spectrum Parameters from the Angular Distribution of Galaxies in Early Sloan Digital Sky Survey Data,” *The Astrophysical Journal*, 591, 1
48. Einasto J., Einasto M., Hütsi G., Saar E., **Tucker D. L.**, Tago E., Müller V., Heinämäki P., Allam S. S. 2003, “Clusters and superclusters in the Las Campanas redshift survey,” *Astronomy & Astrophysics*, 410, 425
49. Smith J. A., **Tucker D. L.**, Allam S. S., Rodgers C. T. 2003, “Local *u'g'r'iz'* Standard Stars in the Chandra Deep Field South,” *The Astronomical Journal*, 126, 2037
50. Abazajian K., Adelman-McCarthy J. K., Agüeros M. A., et al. 2003, “The First Data Release of the Sloan Digital Sky Survey,” *The Astronomical Journal*, 126, 2081
51. Ivezić Ž., Lupton R. H., Schlegel D., et al. 2004, “SDSS data management and photometric quality assessment,” *Astronomische Nachrichten*, 325, 583
52. Doroshkevich A., **Tucker D. L.**, Allam S., Way M. J. 2004, “Large scale structure in the SDSS galaxy survey,” *Astronomy & Astrophysics*, 418, 7
53. Lee B. C., Allam S. S., **Tucker D. L.**, et al. 2004, “A Catalog of Compact Groups of Galaxies in the SDSS Commissioning Data,” *The Astronomical Journal*, 127, 1811
54. Allam S. S., **Tucker D. L.**, Smith J. A., Lee B. C., Annis J., Lin H., Karachentsev I. D., Laubscher B. E. 2004, “Merging Galaxies in the Sloan Digital Sky Survey Early Data Release,” *The Astronomical Journal*, 127, 1883
55. Rider C. J., **Tucker D. L.**, Smith J. A., Stoughton C., Allam S. S., Neilsen E. H. 2004, “A Survey of Open Clusters in the *u'g'r'iz'* Filter System. I. Results for NGC 2548 (M48),” *The Astronomical Journal*, 127, 2210
56. Tegmark M., Blanton M. R., Strauss M. A., et al. 2004, “The Three-Dimensional Power Spectrum of Galaxies from the Sloan Digital Sky Survey,” *The Astrophysical Journal*, 606, 702
57. Tegmark M., Strauss M. A., Blanton M. R., et al. 2004, “Cosmological parameters from SDSS and WMAP,” *Physical Review D*, 69, 103501
58. Abazajian K., Adelman-McCarthy J. K., Agüeros M. A., et al. 2004, “The Second Data Release of the Sloan Digital Sky Survey,” *The Astronomical Journal*, 128, 502
59. Finkbeiner D. P., Padmanabhan N., Schlegel D. J., et al. 2004, “Sloan Digital Sky Survey Imaging of Low Galactic Latitude Fields: Technical Summary and Data Release,” *The Astronomical Journal*, 128, 2577
60. Abazajian K., Adelman-McCarthy J. K., Agüeros M. A., et al. 2005, “The Third Data Release of the Sloan Digital Sky Survey,” *The Astronomical Journal*, 129, 1755
61. Allam S. S., **Tucker D. L.**, Lee B. C., Smith J. A. 2005, “A Catalog of Very Isolated Galaxies from the Sloan Digital Sky Survey Data Release 1,” 129, 2062

62. Einasto J., Tago E., Einasto M., Saar E., Suhhonenko I., Heinämäki P., Hütsi G., **Tucker D. L.** 2005, *Astronomy & Astrophysics*, 439, 45
63. Eisenstein, D. J., Zehavi, I., Hogg, D. W., et al. 2005, “Detection of the Baryon Acoustic Peak in the Large-Scale Correlation Function of SDSS Luminous Red Galaxies,” *The Astrophysical Journal*, 633, 560
64. Jester S., Schneider D. P., Richards G. T., et al. 2005, “The Sloan Digital Sky Survey View of the Palomar-Green Bright Quasar Survey,” *The Astronomical Journal*, 130, 873
65. Adelman-McCarthy J. K., Agüeros M. A., Allam, S. S., et al. 2006, “The Fourth Data Release of the Sloan Digital Sky Survey,” *The Astronomical Journal*, 162, 38
66. Berlind A. A., Frieman J., Weinberg D. H., et al. 2006, “Percolation Galaxy Groups and Clusters in the SDSS Redshift Survey: Identification, Catalogs, and the Multiplicity Function,” *The Astrophysical Journal (Supplement)*, 167, 1
67. Einasto J., Einasto M., Saar E., et al. 2006, “Luminous superclusters: remnants from inflation?,” *Astronomy & Astrophysics*, 459, L1
68. Rodgers C. T.; Canterna R., Smith J. A., Pierce M. J., **Tucker D. L.**, “Improved  $u'g'r'i'z'$  to  $UBVR_{CI}$  Transformation Equations for Main-Sequence Stars,” *The Astronomical Journal*, 132, 989
69. Tago E., Einasto J., Saar E., Einasto M., Suhhonenko I., Jõeveer M., Vennik J., Heinämäki P., **Tucker D. L.** 2006, “Clusters and groups of galaxies in the 2dF galaxy redshift survey: A new catalogue,” *Astronomische Nachrichten*, 327, 365
70. Tegmark M., Eisenstein D. J., Strauss M. A., et al. 2006, “Cosmological constraints from the SDSS luminous red galaxies,” *Physical Review D*, 74, 123507
71. **Tucker D. L.**, Kent S., Richmond M. W, et al. 2006, “The Sloan Digital Sky Survey Monitor Telescope Pipeline,” *Astronomische Nachrichten*, 327, 821
72. Allam S. S., **Tucker D. L.**, Lin H., Diehl H. T., Annis J., Buckley-Geer E. J., Frieman J. A. 2007, “The 8 O’Clock Arc: A Serendipitous Discovery of a Strongly Lensed Lyman Break Galaxy in the SDSS DR4 Imaging Data, *The Astrophysical Journal (Letters)*, 662, L51
73. Einasto J., Einasto M., Saar E., et al. 2007, “Superclusters of galaxies from the 2dF redshift survey. II. Comparison with simulations,” *Astronomy & Astrophysics*, 462, 397
74. Einasto J., Einasto M., Tago E., et al. 2007, “Superclusters of galaxies from the 2dF redshift survey. I. The catalogue,” *Astronomy & Astrophysics*, 462, 811
75. Einasto M., Einasto J., Tago E., Saar E., Liivamägi L. J., Jõeveer M., Hütsi G., Heinämäki P., Müller V., **Tucker D.** 2007, “Superclusters of galaxies in the 2dF redshift survey. III. The properties of galaxies in superclusters,” *Astronomy & Astrophysics*, 464, 815
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RESEARCH  
GRANTS

1. Co-PI on NSF Grant AST-0098401, “Southern Standard Stars for the  $u'g'r'i'z'$  Filter System,” (PI: J. Allyn Smith; award: \$233,000)
2. Co-I on Hubble Space Telescope Cycle 16 Proposal GO-11167, “A Unique High Resolution Window to Two Strongly Lensed Lyman Break Galaxies,” (PI: Sahar Allam; award: \$133,612)
3. Co-I on Hubble Space Telescope Cycle 16-Supplemental Proposal GO-11974, “High-Resolution Imaging for 9 Very Bright, Spectroscopically Confirmed, Group-Scale Lenses,” (PI: Sahar Allam; award: \$419,851)
4. Co-I on Hubble Space Telescope Cycle 17 Proposal GO-11602, “High-Resolution Imaging of Three New UV-Bright Lensed Arcs,” (PI: Sahar Allam; award: \$150,485)
5. Co-I on Spitzer Space Telescope Cycle 4 Proposal 40430, “Spitzer Observations of the Brightest Lensed LBGs,” (PI: Sahar Allam; award: \$75,215)
6. Co-I on Spitzer Space Telescope Cycle 5 Proposal 50086, “Doubling the Sample of Bright Lensed LBGs Observed by Spitzer,” (PI: Sahar Allam; award: \$381,631)
7. Co-PI on NSF Grant AST-1212268, “Calibration and Standardization of Large Surveys and Missions in Astronomy and Astrophysics,” (PI: Dr. Susana Deustua; award: \$25,000)

TEACHING

1. I have mentored the research projects of several undergraduates and high-school students over the course of the past 12 years (see section on “Mentoring Activities”); several of these projects have resulted in publications in refereed professional journals.
2. I have given seminars and public talks to a range audiences, most often at the undergraduate level (see section on “Seminars, Colloquia, & Public Outreach”).
3. I participated in the NASA Center for Astronomy Education (CAE) Teaching Excellence in Introductory Astronomy Workshop, January 7-8, 2006. This workshop focused on dilemmas college astronomy instructors face and developed practical solutions for troubling issues in curriculum, instruction, and assessment.
4. I was a Teaching Assistant for numerous astronomy courses as a graduate student.

**Cristin Rider** (Undergraduate Student)

- Internship for Physics Majors (IPM) program (Summer 2002), off-site on-call laboratory technician (Academic Year 2002/2003), and Summer intern (Summer 2003)
- Project: Study of star clusters in the SDSS  $u'g'r'i'z'$  filter system.
- Publication: Rider et al. 2004, "A Survey of Open Clusters in the  $u'g'r'i'z'$  Filter System. I. Results for NGC 2548 (M48)," *Astronomical Journal*, 127, 2210

**David Moore** (Undergraduate Student)

- Internship for Physics Majors (IPM) program (Summer 2004)
- Project: Study of star clusters in the SDSS  $u'g'r'i'z'$  filter system.

**Bartosz Fornal** (Undergraduate Student)

- Internship for Physics Majors (IPM) program (Summer 2006)
- Project: Study of star clusters in the SDSS  $u'g'r'i'z'$  filter system.
- Publication: Fornal et al. 2007, "A Survey of Open Clusters in the  $u'g'r'i'z'$  Filter System. III. Results for the Cluster NGC 188," *Astronomical Journal*, 133, 1409

**Martin Schaffer** (High School Physics Teacher)

- DOE Academies Creating Teacher Scientists (ACTS) program (Summer 2009)
- Project: Processing DECam 2k x 2k CCD imaging data from a CTIO-1m telescope observing run.

**Holly Batchelor** (Undergraduate Student)

- Internship for Physics Majors (IPM) program (Summer 2010)
- Project: Processing DECam 2k x 2k CCD imaging data from a CTIO-1m telescope observing run, and preparing real-time tools for the DES PreCam Survey.

**Deokguen (Daniel) Park** (High School Student)

- Illinois Mathematics & Science Academy (IMSA) program, Academic Years 2010/2011 and 2011/2012.
- Project 1: Processing DECam 2k x 2k CCD imaging data from a CTIO-1m telescope observing run.
- Project 2: Study of the globular cluster NGC 1851 in the DES filter system from DES PreCam Survey data.
- Publication: Park 2012, "Calibration of CCD Images Using Astronomical Standard Stars," *Journal of Experimental Secondary Science*.

**H. Hope Head** (Undergraduate Student)

- Computing Division internship (Summer 2011) and DOE intern (Summer 2012)
- Project 1: Astrometric calibration of DES PreCam Survey data.
- Project 2 (with Prof. J. A. Smtih): photometric calibration of WIYN-0.9m and CTIO-1m data.

**William Foust** (Undergraduate Student)

- DOE intern (Summer 2012)
- Project: Preparation of Star Flat code for DES.

MENTORING  
ACTIVITIES  
(CONT'D)

**Mees Fix** (Undergraduate Student)

- DOE intern (Summer 2013), DES-funded intern (Academic Year 2013/2014, Summer 2014, Academic Year 2014/2015)
- Project: Spectrophotometric standard stars for DES.
- Publication: Fix et al. 2015, "Discovery of a New Blue Quasar: SDSS J022218.03-062511.1," *Astronomische Nachrichten*, 336, 614

**Samuel Wyatt** (Undergraduate Student)

- DOE intern (Summer 2013), DES-funded intern (Academic Year 2013/2014, Summer 2014, Academic Year 2014/2015)
- Project: Secondary and tertiary Photometric standard stars for DES.

**Deborah Gullede** (Undergraduate Student)

- DES-funded intern (Academic Year 2015/2016)
- Project: Spectrophotometric standard stars for DES.

**Chris McDonald** (Undergraduate Student)

- DES-funded intern (Academic Year 2015/2016)
- Project: Spectrophotometric standard stars for DES.

**Jack Mueller** (High School Student)

- Illinois Mathematics & Science Academy (IMSA) program, Summer 2015, Academic Year 2015/2016, Summer 2016, and Academic Year 2016/2017
- Project 1: Chromatic Effects within the Dark Energy Survey Camera's Filter System.
- Project 2: Active Galactic Nuclei Anomalies within the Dark Energy Camera's Filter System.
- Project 3: The Photometric Properties of Trans-Neptunian Objects within the Dark Energy Camera's Filter System.

SEMINARS,  
COLLOQUIA,  
INVITED TALKS,  
AND PUBLIC  
OUTREACH

1. Astronomical Institute of the Romanian Academy, in Bucharest, Romania, June 1990.
2. Union College, in Schenectady, New York, April 1994.
3. Space Telescope Science Institute, in Baltimore, Maryland, April 1994.
4. Universität Göttingen, in Göttingen, Germany, May 1995.
5. University of Durham, in Durham, England, October 1995.
6. Copenhagen University, in Copenhagen, Denmark, October 1995.
7. New College of USF, in Sarasota, Florida, January 1996.
8. Jagiellonian University, Krakow, Poland, March 1996.
9. Max-Planck-Institut für Astronomie, in Heidelberg, Germany, May 1996.
10. Osservatorio Astronomico di Capodimonte, in Naples, Italy, May 1996.
11. Istituto Nazionale di Fisica Nucleare/Sezione di Perugia, in Perugia, Italy, May 1996.
12. Università Roma La Sapienza, in Rome, Italy, May 1996.
13. New Mexico State University, in Las Cruces, New Mexico, February 1999.
14. Tartu Observatory, in Toravere, Estonia, June 1999.
15. Fermilab, in Batavia, Illinois, October 1999 (Naperville and Peoria Astronomical Societies).
16. Rochester Institute of Technology, in Rochester, New York, November 1999.
17. Fermilab, in Batavia, Illinois, November 2002 (Skokie Astronomy Club).
18. Georgia Southern University, in Statesboro, Georgia, October 2003.
19. Fermilab, in Batavia, Illinois, November 2003 (Notre Dame Physics Club).
20. University of Massachusetts/Dartmouth, in Dartmouth, Massachusetts, March 2005.
21. Fermilab, in Batavia, Illinois, July 2005 (University of Wisconsin REU Program students).
22. Hibbard Elementary School, in Chicago, Illinois, May 2006 (4th, 5th, and 6th grade students).
23. Fermilab, in Batavia, Illinois, July 2006 (University of Wisconsin REU Program students).
24. Fermilab, in Batavia, Illinois, May 2007 (Ask-a-Scientist lecture).
25. Indiana University, in Bloomington, Indiana, October 2008.
26. Southern Connecticut State University, in New Haven, Connecticut, March 2010.
27. Fermilab, in Batavia, Illinois, April 2011 (North Park College Physics Club).
28. Austin Peay State University, in Clarksville, Tennessee, November 2013.

SEMINARS,  
COLLOQUIA,  
INVITED TALKS,  
AND PUBLIC  
OUTREACH  
(CONT'D)

29. Wichita State University, in Wichita, Kansas, February 2015.
30. Adler Planetarium, Chicago, Illinois, October 2015 (“Adler After Dark” public outreach event)
31. Conference on Data Analysis 2016 (“CoDA 2016”), March 2016 (invited talk)