Ross Cawthon

Contact

Department of Astronomy and Astrophysics
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Education

The University of Chicago
Ph.D. Astronomy and Astrophysics. Expected Summer 2018.
Advisor: Josh Frieman

Carleton College
B.A. Physics and Astronomy. June 2012. Magna Cum Laude with Distinction in Major.
Advisor: Cindy Blaha

Collaborations

The Dark Energy Survey (DES) 2013-present
Member of Large-Scale Structure, Theory and Combined Probes, Redshifts, and Education and Public Outreach working groups. Awarded Builder Status in Nov. 2017 for two years of infrastructure contribution.

Research Interests

-Cosmological history of the Universe; cosmological parameters
-Large-scale structure evolution with redshift
-Combining datasets of different surveys for cosmological analysis
-Redshift estimation using galaxy-clustering measurements between photometric and spectroscopic surveys
-New techniques for estimating redshift errors and other systematic effects in cosmological analyses

Conference Presentations

(Talks)
Fermilab Users' Meeting Jun 2017
"Calibrations of Photometric Redshifts from Clustering in the Dark Energy Survey"

American Physical Society (APS April Meeting, Baltimore, MD) Apr 2015
"CMB Lensing Tomography with Dark Energy Survey Science Verification Galaxies"

Dark Energy Survey Collaboration
Meetings (x10, UIUC (x2), Sussex, Fermilab, Michigan,
UA-Madrid, Stanford, Cambridge, Chicago, Brisbane) May 2014-Nov 2017

(Posters)
Fermilab Users' Meeting Jun 2015
"CMB Lensing Tomography with the Dark Energy Survey, the South Pole Telescope, and Planck"

American Astronomical Society (AAS 217th Meeting, Seattle, WA) Jan 2011
"Surveying Ionized Hydrogen Regions in M33"

Invited Talks

Argonne National Laboratory (High Energy Physics Seminar) Dec 2017
"Calibrating Photometric Redshifts using Cross-Correlations with Spectroscopy and the CMB"

University of Pennsylvania (Astrophysics & Cosmology Journal Club) Dec 2017
"Calibrating Photometric Redshifts using Cross-Correlations with Spectroscopy and the CMB"

Stanford University (KIPAC Tea Talk) Nov 2017
"Calibrating Photometric Redshifts using Cross-Correlations with Spectroscopy"

Awards

Early Career Scientist Award to attend Dark Energy Survey Collaboration Meeting
Student Grant to attend American Physical Society Meeting
McCormick Fellowship, The University of Chicago
Minneosta Space Grant Consortium Award, Carleton College
Ewers Award from the Minnesota Space Grant, Carleton College

Observing Experience

Blanco 4-meter, DECam, Cerro Tololo Inter-American Observatory, Chile (30 nights, 2014-2016)
Goodsell Observatory, Carleton College, Minnesota (around 35 nights, 2010-2012)

Teaching Experience

The University of Chicago
Teaching Assistant (2012-2016):
Physical Science 13400: Global Warming
Physical Science 12000: The Origin of the Universe and How We Know
Physical Science 11900: Stellar Astronomy and Astrophysics
Natural Science 10200: Evolution of the Universe
Carleton College

Physics and Astronomy Department Tutor/Lab Assistant (2009-2012)

Service

Institutional Representative for University of Chicago on Dark Energy Survey Education and Public Outreach Committee (2015-present)
Coordinate Dark Energy Survey outreach projects with local members of the survey.

Student Representative on Admissions Committee, University of Chicago (2017-2018)

Co-organizer of Broader Horizons Speaker Series, University of Chicago (2015-2017)
Series for showcasing the breadth of possible career paths with an Astronomy or Physics Ph.D.

Student Representative on Graduate Curriculum Committee, University of Chicago (2014-2015)

Student Departmental Advisor, Carleton College (2011-2012)
Advise students on course choices and completing the major in physics and astronomy.

Outreach and Science Communication

Astronomy Conversations Presenter, Adler Planetarium, Chicago, IL (2014-present)
Volunteer ~monthly for 2 hour conversations with planetarium visitors involving science visualizations.

Lead Editor, Writer, The Darchive: Dark Energy Survey Results in a Nutshell (2016-present)
Website for short articles on science from the Dark Energy Survey explained for the public.
http://www.darkenergysurvey.org/news-and-results/darchives/

Social Media Manager for the Dark Energy Survey (2017-present)
Coordinate and post content for Twitter and Facebook pages.

Instructor, Yerkes Summer Institute, Space Explorers Program, Yerkes Observatory, University of Chicago (2013-2015)
Instructor at yearly 1-week science camp with inner-city high school students.

Regional Finalist, NASA FameLab Competition, Chicago, IL, (June 2015)
Workshop and competition in science communication at a public level.

Open House Host, Goodsell Observatory, Carleton College, MN (2010-2012)
Host and guide to seeing through telescopes and open night sky at monthly open house.

Instructor, Young Astronomers Summer Experience, Goodsell Observatory, Carleton College (July 2010)
Instructor at 2-week astronomy evening program for middle school students.

Publications

(As Lead Author or Major Contributor. On each co-authored paper listed here, I was one of 3-6 full-time contributors to the advancement of the project over several months.)

1. **Projecting Constraints on Galaxy Redshift Distributions Using CMB Lensing in Current and Future Surveys**
   R. Cawthon and S. Dodelson, in preparation.
2. **Dark Energy Survey Year 1 Results: Calibration of redMaGiC Redshift Distributions in DES and SDSS from Cross-Correlations**
   R. Cawthon et al., to be submitted to MNRAS (expected Dec. 2017).
3. **Dark Energy Survey Year 1 Results: Cross-Correlation Redshifts in the DES - Calibration of the Weak Lensing Source Redshift Distributions**
   C. Davis, M. Gatti, P. Vielzeuf, R. Cawthon et al., submitted to MNRAS. arXiv:1710.02517
4. **Dark Energy Survey Year 1 Results: Cross-Correlation Redshifts - Methods and Systematics Characterization**
   M. Gatti, P. Vielzeuf, C. Davis, R. Cawthon et al., submitted to MNRAS. arXiv: 1709.00992
5. **Cross-correlation of gravitational lensing from DES Science Verification data with SPT and Planck lensing**
   D. Kirk, Y. Omori, A. Benoit-Levy, R. Cawthon et al., MNRAS, 459, 1 (2016).
6. **CMB lensing tomography with the DES Science Verification galaxies**
   T. Giannantonio, P. Fosalba, R. Cawthon et al., MNRAS, 456, 3 (2016).

(As Co-author. I contributed analysis to each of these papers. These analyses are either directly shown in the paper, or were systematic tests of the methodology and/or datasets used in the paper.)

7. **Density split statistics: Cosmological constraints from counts and lensing in cells in DES Y1 and SDSS**
   D. Gruen et al., submitted to PRD. arXiv: 1710.05045
8. **Dark Energy Survey Year 1 Results: Cosmological Constraints from Cosmic Shear**
   M.A. Troxel et al., submitted to PRD. arXiv: 1708.01538
9. **Dark Energy Survey Year 1 Results: Galaxy-Galaxy Lensing**
   J. Prat et al., submitted to PRD. arXiv: 1708.01537
10. **Dark Energy Survey Year 1 Results: Galaxy clustering for combined probes**
    J. Elvin-Poole et al., submitted to PRD. arXiv: 1708.01536
11. **Dark Energy Survey Year 1 Results: Curved-Sky Weak Lensing Mass Map**
    C. Chang et al., submitted to MNRAS. arXiv: 1708.01535
12. **Dark Energy Survey Year 1 Results: Redshift distributions of the weak lensing source galaxies.**
    B. Hoyle et al., submitted to MNRAS. arXiv: 1708.01532
13. **Dark Energy Survey Year 1 Results: Cosmological Constraints from Galaxy Clustering and Weak Lensing**
    DES Collaboration et al., submitted to PRD. arXiv: 1708.01530
14. **Cross-Correlation Redshift Calibration Without Spectroscopic Calibration Samples in DES Science Verification Data**
    C. Davis et al., submitted to MNRAS. arXiv: 1707.08256
15. **Galaxy clustering, photometric redshifts and diagnosis of systematics in the DES Science Verification data**
    M. Crocce et al. MNRAS, 455, 4 (2016).