Dr. Ashley J. Ross

Research Scientist

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Research Interests

Large scale structure: improving accuracy and precision of cosmological measurements, applying advanced statistical methods to large data sets, evolution in galaxy properties, use of photometric redshifts

Academic Employment and Titles

The Ohio State University Research Scientist, April 2018 - present

Ohio University Visiting Adjunct Faculty, Dec 4th - present

The Ohio State University CCAPP Postdoctoral Research Fellow, Sep. 2014-April 2018

University of Portsmouth Visiting Research Fellow, Sep. 2014-Aug. 2017

University of Portsmouth Postdoctoral Research Fellow, Sep. 2012-Aug. 2014

University of Portsmouth Postdoctoral Research Associate, Sep. 2009-Aug. 2012

University of Illinois Lecturer for Astronomy 100 “Introduction to Astronomy” Summers 2007 - 2009

Education

Ph.D. Astronomy Department, University of Illinois at Urbana-Champaign (UIUC), conferred in Oct. 2009

Dissertation: *N(th)-order correlation functions of galaxies from the Sloan Digital Sky Survey*

B.A. Carleton College, Northfield MN, conferred in 2004, Magna Cum Laude with Honors in Physics

Collaboration Membership

- SDSS-IV Extended Baryon Oscillation Spectroscopic Survey (eBOSS)

  Organized collaboration meeting (Dec 5-7 2016) at OSU

  Catalog Scientist (March 2018 - present)

  This is a Management Committee level position that serves as a link between the operations, pipeline, and science working groups. The CS crafts and monitors the schedule for creating and testing the large scale structure catalogs in preparation for science publications, and maintains a repository for access to those catalogs and test results. They communicate with the working group leads and the rest of the management team to ensure the timely availability of the catalogs. They specifically work closely with the quasar redshift team to assure the quality of the final quasar catalog.

  Co-chair of galaxy and quasar cosmology working group (May 2013 - May 2017)

  Duties include: provide a forum for scientific discussions and the guidance/co-ordination of projects and to coordinate 1) early data analysis to test targeting algorithms and samples validity for science, 2) predictions for the measurements to be made by the surveys, feeding this work back to the targeting group, and contribute to the documents required and 3) development of the methodology and simulations required to understand the data.

- Dark Energy Survey (DES)

  Co-coordinator of the large scale structure working group (Oct. 2014 - present)

Duties include: Serve on DES Science Committee, Organize scientific efforts utilizing large-scale structure analyses, including, but not limited to, DES Key Projects; organize forums necessary to allow scientific discussions and timely dissemination of results across the collaboration

Co-convener for the large scale structure 2-point clustering analysis group (Nov. 2011 - Oct. 2014)

Duties included: Coordination of clustering analyses on data and simulation, managing sessions at collaboration meetings

Contributed to analyses of collaboration "data challenge" simulated data (catalog construction, treatment of photozs, correlation function measurements)

- Dark Energy Spectroscopic Instrument (DESI)

  Commissioning Instrument Scientist

  Organized collaboration workshop (Dec 7-9 2016) at OSU

  Member of inaugural publication board (2015-2016); helped define and write publication policy

  Member of imaging validation task force

- SDSS-III Baryon Oscillation Spectroscopic Survey (BOSS)

  Organized workshop (Nov 3rd/4th 2014) at OSU CCAPP to finalize plans for the analysis of the final BOSS galaxy data set

  Analysis to measure the 3D clustering of galaxy samples and obtain robust cosmological constraints is ongoing. The methods I developed have been applied to at least 14 publications

  Photometric redshift catalog produced as part of Ross et al. (2011c) is publicly available at http://portal.nersc.gov/project/boss/galaxy/photoz/ and has been used for at least 7 publications

Talks at Open Meetings

Measuring Galaxy Clustering at Gigaparsec Scales
Statistical Challenges in the Era of LSST, Oxford University, April 20th, 2018 (invited)

Cosmological results from the SDSS-III and (IV) (extended) Baryon Oscillation Spectroscopic Survey
TeV Particle Astrophysics Meeting, Cosmology Parallel Session, August 9th, 2017

Galaxy Clustering in the Dark Energy Survey
Dark Energy Survey Special Session, American Astronomical Society April 227th meeting, January, 2016

Early Science Results from the Dark Energy Survey
Invited Session: Exploring the Dark Side of the Universe: Progress and Open Questions, American Physical Society April meeting, April 13th, 2015

Galaxy Clustering in the Dark Energy Survey Science Verification Data
Cosmology III: Dark Energy Survey, American Physical Society April meeting, April 14th, 2015

Cosmology from BOSS Galaxy Clustering and Redshift-Space Distortions
BOSS Special Session, American Astronomical Society 225th meeting, January 5th, 2015

The SDSS-IV Extended Baryon Oscillation Spectroscopic Survey
National Astronomy Meeting, Portsmouth, United Kingdom, June 26th, 2014

The 3D clustering of SDSS-III DR9 BOSS Galaxies
National Astronomy Meeting, Manchester, United Kingdom, March 31st, 2012

The 3D Clustering of BOSS DR9 Galaxies
Cosmology and Galaxy Formation From SDSS-III/BOSS Special Session, American Astronomical Society 212th meeting, January 11th, 2012

Seminars and Colloquia

The Status of Observational Constraints on Dark Energy
The University of St. Andrews, Lunch Talk, April 23rd, 2018

The Status of Observational Constraints on Dark Energy
Kent State University CNR Seminar, November 15th, 2017

Robust and Precise Physical Measurements using Galaxy Surveys: Successes from BOSS and Lessons for the Future
LineA Webinar, September 15th, 2016

Robust and Precise Physical Measurements using Galaxy Surveys: Successes from BOSS and Lessons for the Future
University of Wyoming, Astronomy Colloquium, April 29th 2016

Robust and Precise Physical Measurements using Galaxy Surveys: Successes from BOSS and Lessons for the Future
University of Zurich Astrophysics Seminar, February 9th, 2016

Robust and Precise Physical Measurements using Galaxy Surveys: Successes from BOSS and Lessons for the Future
Ohio University Astrophysics Seminar, November 4th, 2015

Robust and Precise Physical Measurements using Galaxy Surveys: Successes from BOSS and Lessons for the Future
Lawrence Berkeley National Lab INPA Seminar, September 25th, 2015

Robust and Precise Physical Measurements using Galaxy Surveys: Successes from BOSS and Lessons for the Future
Stanford Cosmology Seminar, September 21st, 2015

Making Robust and Precise Physical Measurements Using Galaxy Surveys
Institute for Space Studies of Catalonia (IEEC), Spain, June 5th, 2014

Making Robust and Precise Physical Measurements Using Galaxy Surveys
University of Arizona Physics Colloquium, March 3rd, 2014

Making Robust and Precise Physical Measurements Using Galaxy Surveys
Physics and Astronomy Department, Stony Brook University, Feb 12th, 2014

Making Robust and Precise Physical Measurements Using Galaxy Surveys
Lawrence Berkeley National Laboratory Research Progress Meeting, January 19th, 2014

Measurement of the Baryon Acoustic Oscillation Scale using Red and Blue Galaxies from the Baryon Oscillation Spectroscopic Survey
Institute for Theory and Computation Seminar, Harvard-Smithsonian Center for Astrophysics, Oct 8th, 2013

Making Robust and precise physical measurements using galaxy surveys
University of Illinois Astrophysics Colloquium, Jan 29th, 2013

First results from galaxy clustering in the SDSS-III BOSS survey
Durham University, Institute for Computational Cosmology, May 16th, 2012

First results from galaxy clustering in the SDSS-III BOSS survey
Royal Observatory Edinburgh, Institute for Astronomy, May 2nd, 2012

Ameliorating systematic errors in measurements of the large scale clustering of galaxies
Universidad Autónoma de Madrid, Institute of Theoretical Physics, March 5th, 2012

The Information Content Encoded in the Clustering of Galaxies
Lawrence Berkeley National Laboratory Research Progress Meeting, January 19th, 2012

Ameliorating systematic errors in measurements of the large scale clustering of galaxies
University of Pittsburgh, Particle-physics, Astrophysics and Cosmology Center, January 13th, 2012

Determining the Large-Scale Structure of the Universe using Photometric Redshifts
University of Nottingham Astronomy Department, November 16th, 2011

Determining the Large-Scale Structure of the Universe using Photometric Redshifts
Cambridge University Department of Applied Math and Theoretical Physics, May 9th, 2011

Measuring and Analyzing Galaxy Clustering with Photometric Surveys
Lawrence Berkeley National Lab Institute for Nuclear and Particle Astrophysics, April 1, 2011

Measuring and Analyzing Galaxy Clustering with Photometric Surveys
Yale University Astronomy Department, October 28th, 2010

Understanding the Clustering of Faint Red Galaxies
University of Pennsylvania Astronomy Department, October 26th, 2010

The Effects of Redshift Space Distortions on Angular Clustering Measurements
University College London Astronomy Department, September 16th, 2010

Measuring and Analyzing the Clustering of Photometrically Selected Samples of Galaxies
Institute for Space Studies of Catalonia (IEEC), Spain, March 17th, 2010

Collaboration meeting and other Research Talks

Optimizing Anisotropic BAO Measurements (BOSS)
SDSS-III Collaboration Meeting at Park City, Utah, July 30th, 2014

Baryon Acoustic Oscillations, Redshift Space Distortions Technical Papers (eBOSS)
SDSS-IV Collaboration Meeting at Park City, Utah, July 27th, 2014

BAO and RSD results from BOSS CMASS split by color (BOSS)
SDSS-III Collaboration Meeting at Johns Hopkins University, June 12th, 2013

Quasar and Galaxy Clustering
SDSS-IV eBOSS Design Review, Lawrence Berkeley National Laboratory, Dec. 12th, 2013

Observational systematics and physical interpretation of large-scale structure
Dark Energy Spectroscopic Instrument Collaboration Meeting, Lawrence Berkeley National Laboratory, July 17th, 2013

eBOSS galaxy clustering cosmology and what we can do now
SDSS IV Collaboration Meeting at Johns Hopkins University, June 9th, 2013

Testing robustness of cosmological results to galaxy properties and update on bright star mask
SDSS-III BOSS Collaboration Meeting at Carnegie Mellon University, December 10th, 2012

Systematic Errors on Clustering Measurements: Lessons from BOSS
BigBoss Collaboration Meeting, Institut Henri Poincaré, Paris, Oct 9th, 2012

(1) fNL and stellar systematics degeneracy
(2) Systematic errors caused by Galactic foregrounds
(3) Mocks and simulations: BOSS experience
Dark Energy Survey Collaboration Meeting, Munich, May 9th-10th, 2012

Review of DR9 BOSS galaxy clustering systematics and strangest features
SDSS-III BOSS Collaboration Meeting at NYU, January 4th, 2012

Challenges in Measuring Large-Scale Structure using Photometric Redshifts
Workshop on progress in theoretical and observational cosmology
Institute of High Energy Physics, Chinese Academy of Sciences, November 8th, 2011

Ameliorating Systematics Errors in the Angular Clustering of SDSS DR8 LRG Photo-z Data
Dark Energy Survey Collaboration Meeting, Portsmouth, June 29th, 2011

Ameliorating systematic errors on the angular correlation function (of CMASS galaxies)
SDSS-III BOSS Collaboration Meeting at Apache Point, March 25th, 2011

Measuring RSD with DES
Dark Energy Survey Collaboration Meeting, Fermilab, October 21st, 2010

DC4 clustering: mask, catalog selection and photoz consideration
Dark Energy Survey Collaboration Meeting, Stanford, December 1st, 2009

Outreach

Organized and participated in lesson/demo on solar system sizes and distances at Innis Elementary School, March 21st, 2017 and March 22nd, 2016

Organized and participated in CCAPP's participation in Science Day at Innis Elementary School, Dec. 10th, 2015; all-day event included our contribution of an interactive presentation about traveling to the Moon, for students aged 6-9

Teaching and Student Supervision

Summer 2016: Helped plan and lectured for physics portion of OSU summer bridge program, a three week program to prepare incoming first year undergraduates.

Fall 2012 - Spring 2016: 2nd-supervisor for Matteo Tellarini's Ph.D. project on primordial non-Gaussianity and large-scale structure, starting October 2012

Fall 2012 and 2013: Lectured on Cosmic Microwave Background for M371 "Modern Astrophysics", a University of Portsmouth course for 3rd Year Math students

Summer 2012: Supervised undergraduate summer research project of Will Green who compared the methods and galaxy samples used for obtaining baryon acoustic oscillation (BAO) constraints in a Dark Energy Survey (DES) mock galaxy catalog.

Summer 2011: Supervised undergraduate summer research project of Chris Frohmaier, who investigated systematic differences in the photometry of SDSS DR7 and DR8 data and its effect on the selection of galaxy catalogs.

Summer 2007, 2008, 2009: Taught Astronomy 100 "Introduction to Astronomy" at the University of Illinois. This was the full semester coarse-load compressed to four weeks.

Service

Peer review for many (>5 in past year) journal articles (MNRAS, ApJ, A&A, JCAP, and Proceedings of the (U.S.) National Academy of Sciences).

Served as Institute of Cosmology & Gravitation postdoctoral representative to communicate concerns of postdoctoral researchers to permanent staff and organize informal meetings, from Oct. 2009- Aug. 2014.

Referees

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