John K. Parejko

Curriculum Vitae

Scientific Interests

Large Scale Surveys, AGN, Galaxy Evolution, Cosmology, Software, Outreach

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Education

2010 **Ph.D. Physics**, *Drexel University*, Philadelphia, PA.
Adviser: Dr. Michael S. Vogeley
Thesis: *Hosts and Environments of Low Luminosity Active Galaxies in the Local Universe*

2007 **M.S. Physics**, *Drexel University*, Philadelphia, PA.

2002 **B.A. Physics**, *Carleton College*, Northfield, MN - *Cum Laude*.
2001 Budapest Semester in

Academic Employment

2016-current **Department of Astronomy**, *University of Washington*, Seattle, WA.
Research Scientist: LSST Data Management/DIRAC Fellow

2012-2014 **Physics Department**, *Yale University*, New Haven, CT.
Research Associate: SDSS Operations Software Manager

2010-2012 **Physics Department**, *Yale University*, New Haven, CT.
Postdoctoral Associate

2002-2004 **Space Physics Research Lab**, *University of Michigan*, Ann Arbor, MI.
Software Development and Data Analysis, Cassini/Huygens INMS team

Summer 2001 **Space Physics Research Lab**, *University of Michigan*, Ann Arbor, MI.
NSF Research Experience for Undergraduates, Cassini/Huygens CAPS team

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Selected Peer Reviewed Publications

Mitigation of LEO Satellite Brightness and Trail Effects on the Rubin Observatory LSST
Tyson, J. A., Ivezić, Ž., Bradshaw, A., Rawls, M. L., Xin, B., Yoachim, P., **Parejko**, J., Greene, J., Sholl, M., Abbott, T. M. C., Polin, D., AJ, 2020, 150, 5

Dimensionality Reduction of SDSS Spectra with Variational Autoencoders

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Portillo, S. K. N., **Parejko**, J. K., Vergara, J. R., Connolly, A. J., 2020, AJ, 160, 1

Inferring the parallax of Westerlund 1 from Gaia DR2
Aghakhanloo, M., Murphy, J. W., Smith, N., **Parejko**, J., Díaz-Rodríguez, M., Drout, M. R., Groh, J. H., Guzman, J., Stassun, K. G., 2020, MNRAS, 492, 2

An Overview of the LSST Image Processing Pipelines
Bosch, J. and 33 alphabetical coauthors, 2019, ADASS XXVIII. ASP Conference Series, Vol. 523

Sustaining Community-Driven Software for Astronomy in the 2020s
Tollerud, E., Smith, A., Price-Whelan, A., Cruz, K., Norman, D., Narayan, G., Mumford, S. and 109 alphabetical coauthors, 2019, Astro2020 white papers no. 180

The Astropy Problem
Muna, D. and 153 aphabetical coauthors, 2016, eprint arXiv:1610.03159

P-MaNGA Galaxies: Emission Lines Properties - Gas Ionisation and Chemical Abundances from Prototype Observations
Belfiore, F., Maiolino, R., Bundy, K., Thomas, D., Maraston, C., Wilkinson, D., Sánchez, S. F., and 23 alphabetical coauthors, 2015, MNRAS, 449, 1

The clustering of galaxies in the SDSS-III Baryon Oscillation Spectroscopic Survey: galaxy clustering measurements in the low redshift sample of Data Release 11
Tojeiro, R, Ross, A. J., Burden, A., Samushia, L., Manera, M., Percival, W. J., and 19 alphabetical coauthors, 2014, MNRAS, 440, 2222

The Tenth Data Release of the Sloan Digital Sky Survey: First Spectroscopic Data from the SDSS-III Apache Point Observatory Galactic Evolution Experiment
236 alphabetical coauthors, 2014, ApJS, 211, 17 *Cross-Correlation of SDSS DR7 Quasars and*

DR10 BOSS Galaxies: The Weak Luminosity Dependence of Quasar Clustering at z~0.5
Shen, Y., McBride, C. K., White, M., Zheng, Z., and 20 coauthors, 2013, ApJ, 778, 98

The Clustering of Galaxies in the SDSS-III Baryon Oscillation Spectroscopic Survey: Luminosity and Color Dependence and Redshift Evolution
Guo, H., Zehavi, I., Zheng, Z., Weinberg, D., and 39 coauthors, 2013, MNRAS, 431, 1383

The clustering of galaxies in the SDSS-III Baryon Oscillation Spectroscopic Survey: the low redshift sample
Parejko, J. K., Sunayama, T., Padmanabhan, N., Wake, D., and 35 alphabetical coauthors, 2013, MNRAS, 429, 98

The Baryon Oscillation Spectroscopic Survey of SDSS-III
Dawson, K. S., Schlegel, D. J., and 163 alphabetical coauthors, 2013, AJ, 145, 10

The Ninth Data Release of the Sloan Digital Sky Survey: First Spectroscopic Data from the SDSS-III Baryon Oscillation Spectroscopic Survey
236 alphabetical coauthors, 2012, ApJS, 203, 21A

The clustering of galaxies in the SDSS-III Baryon Oscillation Spectroscopic Survey: Baryon Acoustic Oscillations in the Data Release 9 Spectroscopic Galaxy Sample
76 alphabetical coauthors, 2012, MNRAS, 427, 3435

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The clustering of galaxies in the SDSS-III Baryon Oscillation Spectroscopic Survey: Analysis of potential systematics
Ross, A., and 40 coauthors, 2012, MNRAS, 424, 564

SDSS-III: Massive Spectroscopic Surveys of the Distant Universe, the Milky Way, and Extra-Solar Planetary Systems
Eisenstein, D. J., Weinberg, D. H., and 242 alphabetical coauthors 2011, AJ, 124, 72

The Clustering of Massive Galaxies at z ~ 0.5 from the First Semester of BOSS Data
White, M., Blanton, M., Bolton, A., Schlegel, D., Tinker, J., Berlind, A., da Costa, L., Kazin, E., Lin, Y.-T., Maia, M., McBride, C. K., Padmanabhan, N., **Parejko**, J. K., Percival, W., Prada, F., Ramos, B., Sheldon, E., de Simoni, F., Skibba, R., Thomas, D., Wake, D., Zehavi, I., Zheng, Z., Nichol, R., Schneider, Donald P., Strauss, Michael A., Weaver, B. A., Weinberg, D. H., 2011, ApJ, 728, 126

Galaxy Zoo Green Peas: discovery of a class of compact extremely star-forming galaxies
Cardamone, C., Schawinski, K., Sarzi, M., Bamford, S. P., Bennert, N., Urry, C. M., Lintott, C., Keel, W. C., **Parejko**, J. K., Nichol, R. C., Thomas, D., Andreescu, D., Murray, P., Raddick, M. J., Slosar, A., Szalay, A., & Vandenberg, J. 2009, MNRAS, 1256

Eight-Dimensional Mid-Infrared/Optical Bayesian Quasar Selection
Richards, G. T., Deo, R. P., Lacy, M., Myers, A. D., Nichol, R. C., Zakamska, N. L., Brunner, R. J., Brandt, W. N., Gray, A. G., **Parejko**, J. K., Ptak, A., Schneider, D. P., Storrie-Lombardi, L. J., & Szalay, A. S. 2009, AJ, 137, 3884

Source Matching in the SDSS and RASS: which Galaxies are Really X-Ray Sources?
Parejko, J. K., Constantin, A., Vogeley, M. S., & Hoyle, F. 2008, AJ, 135, 10

The Cassini Ion and Neutral Mass Spectrometer (INMS) Investigation
Waite, J. H., Lewis, W. S., Kasprzak, W. T., Anicich, V. G., Block, B. P., Cravens, T. E., Fletcher, G. G., Ip, W.-H., Luhmann, J. G., McNutt, R. L., Niemann, H. B., **Parejko**, J. K., Richards, J. E., Thorpe, R. L., Walter, E. M., & Yelle, R. V. 2004, Space Science Reviews, 114, 113

Awards

2008	**Chambliss Astronomy Student Poster**, *AAS 211th meeting*, Austin, TX. Honorable Mention	
2008	**International Science & Engineering Visualization Challenge**, NSF/AAAS. Semifinalist, Informational/Explanatory Graphics	
2008	**Physics Graduate Student Award for Research and Service**, *Drexel University*, Philadelphia, PA.	

Posters and Presentations

January 2019	**Jointcal: Optimized Astrometry & Photometry for Thousands of Exposures with Large Mosaic Cameras**, *233rd AAS Meeting*, Seattle, WA.

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June 2013	**Nightly Operations at APO**, *SDSS IV collaboration meeting*, John's Hopkins University, Baltimore, MA.
January 2011	**The Small-scale Clustering Of Massive Galaxies At 0.2<z<0.4**, *217th AAS Meeting*, Seattle, WA.
October 2010	**The Care and Feeding of Weak AGN**, *Yale Center for Astronomy and Astrophysics*, Yale University, Invited talk.
January 2010	**The Environments of Bona-fide Low Luminosity AGN in the Local Universe**, *215th AAS Meeting*, Washington D.C., Dissertation talk.
June 2009	**Interacting Void Galaxies in the SDSS**, *The Monster's Fiery Breath: Feedback in galaxies, groups and clusters*, Madison, WI.
January 2009	**Hunting for Low Luminosity AGN Using Optical and X-ray Emission**, *213th AAS Meeting*, Long Beach, CA.
August 2008	**X-ray Emitting Galaxies in the SDSS**, *The Sloan Digital Sky Survey: From Asteroids to Cosmology*, Chicago, IL.
January 2008	**The Soft X-ray Properties of "Ordinary" SDSS Galaxies**, *211th AAS Meeting*, Austin, TX.
March 2007	**The X-ray Sources of "Ordinary" SDSS Galaxies**, *2007 SDSS Collaboration Meeting*, Drexel University, Philadelphia, PA.
January 2007	**The Spectral Energy Distributions of Normal and Weakly-Active Galaxies**, *209th AAS Meeting*, Austin, TX.

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Outreach and Service

Service

2011-2013   **SDSS-III Galaxy Clustering Working Group**.
Telecon Minutes Secretary

2011-2012   **Yale Cosmology Seminar**, *Yale University*, New Haven, CT.
Organizer
`http://www.astro.yale.edu/~jp727/Seminar/`

March 2011   **BOSS collaboration meeting**, Cloudcroft, NM.
Data Analysis Session Chair

2007-2009   **Physics Graduate Student Association**, *Drexel University*, Philadelphia, PA.
Co-founder, Co-chair and talk organizer
`http://www.physics.drexel.edu/~pgsa/`

Invited Public Talks

February 2016   **Astronomy on Tap**, *Bad Jimmy's Brewery*, Seattle, WA.
Detect the Ancient Universe Like a BOSS

October 2016   **Astronomy on Tap**, *Peddler Brewing*, Seattle, WA.
Joint talk with David Reiss: *Mining the Sky in 4D*

Spring 2013   **New Haven Public Schools**, New Haven, CT.
Science in the News (group talk): *The Science Behind Climate Change*

December 2012   **Leitner Observatory**, *Yale University*, New Haven, CT.
Invited Speaker - *Warmer Earth - Weirder Weather*

June 2012   **New Haven Public Library**, New Haven, CT.
Science in the News (group talk): *The Science Behind Climate Change*

December 2011   **Leitner Observatory**, *Yale University*, New Haven, CT.
Invited Speaker - *Greenhouse Gasses and Global Weirding*

November 2010   **Leitner Observatory**, *Yale University*, New Haven, CT.
Invited Speaker - *Where Have All The Quasars Gone?*

Feb 2008   **Delaware Valley Amateur Astronomers**, Plymouth Meeting, PA.
Invited Speaker - *Where Have All The Quasars Gone?*

May 2008   **Rittenhouse Amateur Astronomers**, Philadelphia, PA.
Invited Speaker - *Two Observatories (and a Robot)*

Public Outreach Coordination

2004–2009   **Lynch Observatory**, *Drexel University*, Philadelphia, PA.
Open House Coordinator
`http://www.physics.drexel.edu/observatory/`

2005–2008   **Astronomy for Teachers**, *Drexel University*, Philadelphia, PA.
Seminar Series Instructor/Coordinator

2005–2008	**6th Grade Astronomers**, *Drexel University*, Philadelphia, PA. Observatory Instructor/Coordinator
2000–2002	**Goodsell Observatory**, *Carleton College*, Northfield, MN. Open House Assistant

Non-profit organizations

2019-current	**Radost Dance Ensemble**, Seattle, WA. Dancer; Board of Directors
2017-2019	**Seattle Skandia**, Seattle, WA. Music committee member

Teaching

University of Washington

Spring 2019	Undergraduate Research Mentor

Yale University

2010-2013	Astrophysics, Graduate Research Mentor
Summer 2011	Undergraduate/Graduate Python programming workshop

Drexel University

2008-2010	Astrophysics, Undergraduate Research Mentor
Fall 2005	Physics 232: *Observational Astrophysics*, Teaching Assistant
Summer 2005	Physics 211: *Applied Physics III*, Teaching Assistant
Spring 2005	Physics 131: *Survey of the Universe*, Teaching Assistant
Winter 2005	Physics 153: *Introductory Physics II*, Teaching Assistant
Fall 2004	Physics 131: *Survey of the Universe*, Teaching Assistant

Carleton College

Spring 2002	Astronomy 113: *Observational Astronomy*, Teaching Assistant
2001–2002	Math Skills Center, Math Tutor

Programming and Technical Skills

Programming Languages
○ Python, C/C++. Java, Javascript, HTML/CSS, SQL, LATEX, IDL, IRAF

Operating Systems
○ GNU/Linux (Debian), Mac OS X/macOS, Solaris, Windows 7

Experience

- Developed, tested, and documented python interface for Rubin Observatory Avantes fiber spectrograph, to interface with vendor-supplied C library; https://github.com/lsst-ts/ts_FiberSpectrograph

- Live debugging and software support for nightly SDSS 2.5m telescope operations.

- Developed python unittest-based testing framework for telescope systems simulation and testing for SDSS operations software.

- Updated python-based Spectrograph Operation Package (SOP) to support BOSS, APGOEE, and MaNGA operations for SDSS 2.5m telescope.

- Refactored, enhanced, tested, and documented python and C-based guiding software for SDSS 2.5m telescope.

- Developed, tested, and documented python-based high-speed MPI pair counting code, used by members of the SDSS collaboration for correlation function studies, in collaboration with Nikhil Padmanabhan (Yale).

- Developed, tested, and documented python-based spherical-polygon code, used by memebers of the SDSS collaboration for working with sky masks, in collaboration with Martin White (Berkeley) and Molly Swanson (MIT).

- Developed and documented PyRAF-based spectroscopic reduction script for data from GoldCam on the Kitt Peak National Observatory 2.1m telescope.

- Developed and documented Python interface for parallel C++ code, used within the Drexel physics department.

- Programmed internal INMS Operations Network (ION) data access portal for mission critical data retrieval (used by about 20 researchers).

- Constructed JUnit test suite for ION website as part of test-driven development.

- Created instrument data tables for INMS measurements. These tables replaced the original tables and were used for the first INMS measurements of Saturn and Titan.

- Simulated flyby of the $3 billion dollar Cassini/Huygens mission through a global circulation climate model atmosphere of Saturn's Moon Titan. This was used for validation/verification of the data pipeline to demonstrate whether future (closer) flybys could be conducted safely and successfully.

References

- Andrew Connolly, Professor
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  Seattle, WA 98195-1580
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  ajc@uw.edu

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  University of Washington
  PO Box 351580
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  206 543-2859
  rowen@uw.edu

- Constance Rockosi, Professor/Astronomer
  UCO/Lick Observatory
  University of California
  1156 High Street
  Santa Cruz, CA 95064
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