Krzysztof Suberlak

Curriculum Vitae

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Interests

Astrostatistics and data mining. I study how properties of the engine of active galactic nuclei, such as black hole mass, or accretion disk luminosity, correlate with the Damped Random Walk parametrization.

Education

University of Washington, Seattle, WA — 2013 – present
PhD Candidate in Astronomy

University of Oxford, UK — 2008 – 2012
MPhys Physics

Computer skills

Python open data science stack (NumPy, SciPy, AstroPy, Pandas, Matplotlib, Scikit-learn, iPython, Jupyter-Lab, AstroML, etc.); Github (**version control**); **UNIX / Linux** based systems; **LSST science pipelines** (LSST "Stack"); Database manipulation: **SQL**, Apache-Spark, AXS, Dask, LSD; Collaboration tools: **Jira**, **Confluence**, Docushare, **LaTeX**, Zenodo.

Selected Graduate Research

LSST Crowded Fields: testing the LSST Stack performance — 2018

Comparing the results of LSST Stack performance to the state-of-the-art DECAPS pipeline.

- Developed data processing pipeline, analyzed the results
- Made recommendations for photometric accuracy and astrometric precision in DMTN077 "LSST Fall 2017 Crowded Fields Testing"

LSST PDAC: user testing the Prototype Data Access Center — 2017

- tested the functionality of PDAC, as part of DM-SST
- made recommendations for the DM-SST team during telecons, and summarized in the report DMTR022 "Prototype Data Access Center: User Report"

eScience Data Science for Social Good — Jun 2015 – Aug 2015

Summer work at the University of Washington eScience Institute, working Dr. Ariel Rokem and Dr. Bryna Hazelton on a Gates Foundation "Predictors of Permanent Housing for Homeless Families"

- cleaned the heterogeneous datasets describing homeless shelters in King, Pierce and Snohomish counties
- developed python code to define families based on hierarchical clustering involving coincidence of entry times and IDs

Employment

University of Washington, Research Assistantship — Jan 2016 – present

Graduate Research Assistantship with Dr. Željko Ivezić

University of Washington, Teaching Assistantship — Oct 2013 – Dec 2015

Graduate Teaching Assistantship

Nicolaus Copernicus Astronomical Center, Poland, Research Associate — Feb 2013 – Jul 2013

Research with Dr. Agata Rozanska

- Measured Active Galactic Nuclei spectra from the VIMOS Public Extragalactic Redshift Survey
- Improved classification scheme and data reduction software

University of Oxford, Research Studentship — Oct 2012 – Dec 2012

Research with Dr. Leigh Fletcher and Prof. Pat Irwin

- Analyzed the infrared data of Jupyter atmosphere from Cassini
- Verified the possible depth of measurement using ethane spectral lines.

University College of London, Nuffield Fellowship — Jun 2011 – Aug 2011

Undergraduate Research at the Mullard Space Science Laboratory, UK, with Prof Andrew Coates and Dr Adam Masters

– Analyzed the location of Saturns plasmapause using Cassini Plasma Spectrometer (CAPS) Electron Spectrometer (ELS) data

Undergraduate Research

University of Oxford, AOPP Research Assistantship Jun 2011 – Aug 2011

Summer research experience with Dr. Neil Bowles and Dr. Ian Thomas at the University of Oxford Oceanic and Planetary Physics sub-department

– Performed laboratory measurements and data analysis supporting the Diviner instrument on the Lunar Reconnaissance Orbiter

– Determined the grain size distribution of the lunar soil equivalent, to aid modelling of thermal emission of lunar regolith

University of Oxford, Masters Thesis Jan 2012 – Apr 2012

Measuring Expansion of the Universe with Supernovae with Dr.Fraser Clarke and Dr. Mark Sullivan

– Observed, reduced, and analysed data for new supernovae

– Measured the Hubble constant with lightcurve fitting software

Nicolaus Copernicus Astronomical Center, Warsaw, Poland Jun 2012 – Aug 2012

Research at the Polish Academy of Sciences with Dr. Agata Różańska

– Analyzed Chandra x-ray data with CIAO, performed spectroscopy and imaging of Sagittarius A*

– Investigated the spectroscopy of x-ray filaments, and examined the morphology of the region in various energy bands to find the sources of emission.

Publications

– **Suberlak, K.L.**, Ivezić, Ž., MacLeod, C.L., Graham, M., Branimir, S. "Solving the puzzle of discrepant quasar variability on monthly time-scales implied by SDSS and CRTS data sets." Monthly Notices of the Royal Astronomical Society, Volume 472, Issue 4, p.4870-4877 (2017)

Honors And Awards

– University of Washington eScience Institute Data Science for Social Good Fellow (2015-present)

– Data Intensive Research in Astrophysics and Cosmology (DIRAC) at the University of Washington: DIRAC Institute Fellow (2016-present)

– Astrobiology Fellow, University of Washington, 2013-2014.

Professional Presentations

– Poster: Astrophysical Frontiers in the Next Decade and Beyond: Planets, Galaxies, Black Holes, & the Transient Universe. Portland, OR. June 26, 2018

– Poster: "Bayesian inference in forced photometry" at Northwest Astronomy Meeting, Bellinham, WA. Oct 29, 2016

– Poster: "What to do with negative fluxes?" at the intermediate Palomar Transient Factory (iPTF) Summer School, California Institute of Technology. Pasadena, CA. July 18, 2016

– Poster: "Solving the puzzle of discrepant quasar variability on monthly time scales implied by SDSS and CRTS datasets." 227th American Astronomical Society Meeting. Kissimmee, FL. January 6, 2016.

– Poster: "New Constraints on Quasar Variability based on 8,000 SDSS Stripe 82 Quasars with both SDSS and CRTS Lightcurve Data." 225th American Astronomical Society Meeting. Seattle, WA. January 6, 2015.

Workshops and Conferences

– LSST 2017 Project and Community Workshop. Tucson, AZ. Aug 14-18, 2017

– Detecting the Unexpected: Discovery in the Era of Astronomically Big Data. Space Telescope Science Institute, Baltimore, MD. Feb 27 - March 2, 2017

– Summer School 2016 Astrostatistics & Data Mining. International Max Planck Research School for Astronomy & Cosmic Physics at the University of Heidelberg, Germany. Sept 12-16, 2016

Teaching Experience

– ASTR150 The Planets: Teaching assistant for three quarters (Winter 2013, Summer 2014 for Dr Nicole Silvestri; Spring 2015 for Dr Toby Smith)

– ASTR101 Introduction to Astronomy: Teaching assistant for eight quarters (Fall 2013, Fall 2015, Summer 2016, Autumn 2016 for Dr Ana Larson ; Spring 2014, Spring 2016 for Dr Chris Laws; Winter 2015, Winter 2016 for Dr Oliver Fraser)