JENNIFER KADOWAKI

PhD Candidate in Astrophysics

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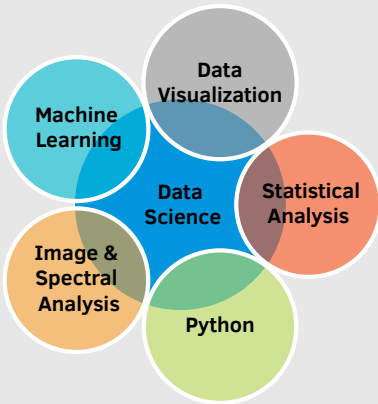
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Skills

Overview

Relevant Graduate Coursework

- Data Mining & Machine Learning in Astronomy
- Instrumentation & Statistics
- Introduction to Machine Learning
- Numerical & Statistical Methods
- Statistical Methods in Astrophysics

Relevant Course Projects

- **ASTR 513**: Reproduced the 2011 Physics Nobel Prize results using Bayesian analysis. Tested results for bias due to host galaxy masses.
- **ASTR 502**: Detected dwarf galaxies using kernel density estimation on large imaging surveys. Evaluated the completeness and false detection rates for different kernels.

Publications

- *"Spectroscopy of Ultra-diffuse Galaxies in the Coma Cluster"* **Kadowaki**, Zaritsky, & Donnerstein. 2017, ApJL, 838, L21.

Education

2015 - 2020	**PhD, Astronomy & Astrophysics**	University of Arizona
2015 - 2017	**MS, Astronomy & Astrophysics**	
2010 - 2014	**BS, Physics**	UCLA

Research

Aug 2015 - present   **Graduate Research Assistant**   University of Arizona

PhD Dissertation: *The Formation of Massive Ultra-diffuse Galaxies*

- Mining for ultra-diffuse galaxies (UDG) on TB-sized, deep-imaging surveys.
- Developing an algorithm to predict distances to and environments of UDGs to test whether environmental mechanisms halted star formation.
- **Tools**: Python (scikit-learn, pandas, bokeh, matplotlib, NumPy, SciPy), Machine Learning (kernel density estimation, regression), SQL
- **Award**: 🏆 Honorable Mention, NSF Graduate Research Fellowship (2017)

Aug 2015 - May 2017   **Graduate Research Assistant**   University of Arizona

Masters Thesis: *Spectroscopy of Ultra-diffuse Galaxies in the Coma Cluster*

- Confirmed the first set of UDGs in a galaxy cluster and discovered the first with ionized gas via spectroscopy.
- Determined the average age and chemical composition of UDGs in galaxy clusters using stellar population synthesis models.
- **Tools**: Python, IRAF, PÉGASE-HR, matplotlib

Jan 2012 - Apr 2015   **Undergraduate Research Assistant**   UCLA

Senior Thesis: *Separating the Disk and Jet Activities of Quasars*

- Built a data reduction pipeline to reduce optical and infrared imaging data and to automatically measure quasar brightnesses against standard stars.
- Modeled simultaneous disk and jet activities of 15 quasars to understand how accretion disks power relativistic jets.
- **Tools**: Python, IRAF/PyRAF, NumPy, SciPy, matplotlib
- **Awards**: 🏆 UCLA Dean's Prize (2013), 🎓 Clare Boothe Luce Scholarship (2012-2013), 🎓 Northrup Grumman-Litton Scholarship (2013-2014)

June 2014 - Aug 2014   **REU Summer Student**   Space Telescope Science Institute

AGN Variability in the Hubble CANDELS Survey

- Simulated the AGN detection limits and spurious source fractions for the CANDELS survey by modeling Hubble's point spread function.
- **Tools**: Python, TinyTim, Bash, multiprocessing,

June 2013 - Sept 2013   **REU Summer Student**   National Radio Astronomy Observatory

Stacking Spectra of Dense Gas Tracers in the Antennae Galaxies

- Extracted faint signals from dense gas by stacking spectra corrected for line-of-sight velocities. Determined that a greater fraction of dense gas exists across the most extreme star forming regions in the galaxy merger.
- **Tools**: Python, IDL, NumPy, matplotlib

Experience

Jan 2017 - May 2018   **Graduate Teaching Assistant**   University of Arizona

ASTR 170B (The Physical Universe), *ASTR 201 (Cosmology)*

- Lectured, planned curriculum, graded assignments, and held bi-weekly office hours and exam reviews.