Ryan J. Rickards Vaught

Contact Information

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Research Interests

Chemical Evolution of Galaxies, Interstellar Medium, and Stellar Feedback

Education

University of California, San Diego, San Diego, CA

Ph.D in Physics, May 2024

San Diego State University, San Diego, CA

M.S in Astronomy, May 2018

San Francisco State University, San Francisco, CA

B.S in Physics with concentration in Astrophysics, May 2016

Research Experience

Mapping of MgII emission in $z \approx 0.7$ galaxies. 2016-2018
Advisor: Prof. Kate Rubin, SDSU

- Reduced and stacked VLT/FORS2 broadband images to produce a MgII line image to map MgII emission tracing galactic winds in star-forming regions.

Measuring equivalent widths of NaI absorption in quasar/galaxy pairs. Summer 2016
Advisor: Prof. Kate Rubin, SDSU

- Inspected Keck/ESI echellette spectra for NaI absorption, if found, measured equivalent widths for this transition.

Identifying optical counterparts to X-ray sources in the globular cluster ωcen. Spring 2014
Advisor: Prof. Adrienne Cool, SFSU

- Analyzed Hubble Space Telescope and Chandra images with Python tools and DS9 to locate and identify optical counterparts to X-ray sources in the cluster Omega Centauri.

Blackbody fitting of white dwarf spectral energy distributions Summer 2013
San Francisco State University
Advisor: Christopher McCarthy, Ph.D

- Produced IDL fitting routine to model substellar and proto-planetary objects as perfect blackbodies.

Awards

Strategic Enhancement of Excellence through Diversity (SEED) Fellowship	March 2018
Ruth and Clifford Smith Astronomy Fellowship	October 2017
William F. Lucas San Diego Astronomy Association Memorial Scholarship	October 2017
Eden Academic Excellence Award	April 2015
Dean's list	Fall 2014 & Spring 2015
Michael and Greta McKinney Scholarship	October 2014

Publications

- "Investigating the Drivers of Electron Temperature Variations in HII Regions with Keck-KCWI and VLT-MUSE"
  Astrophysical Journal, *Rickards Vaught, Ryan et.al Submitted.*
- "Keck Cosmic Web Imager Observations of He II Emission in I Zw 18 "
  Astrophysical Journal Letters, *Rickards Vaught, Ryan et.al 2021.*
- "A VLT/FORS2 Narrowband Imaging Search for Mg II Emission around z $\sim$ 0.7 Galaxies"
  Astrophysical Journal, *Rickards Vaught, Ryan et.al 2019.*

Presentations

"Metallicities and Electron Temperatures from Auroral Lines for 421 HII Regions in Nearby Galaxies" — September 2023
Keck Science Meeting 2023
Oral

"HII Region Electron Temperatures and Abundances from Keck-KCWI and VLT-Muse Observations of Nearby Galaxies" — January 2023
American Astronomical Society, AAS Meeting #441
Oral

"Auroral Line Temperatures in Nearby Galaxies from Keck Cosmic Web Imager Observations" — September 2021
Keck Science Meeting 2021
Poster

"Keck Cosmic Web Imager Observations of HeII EMission in I Zw 18" — September 2020
Keck Science Meeting 2020
Poster

"VLT/FORS2 Narrowband Imaging Search for MgII Emission Around z∼0.7 Galaxies" — June 2017
American Astronomical Society, AAS Meeting #230
Poster

"A Search for X-ray Emitting Binary Stars in the Globular Cluster Omega Centauri" — June 2016
American Astronomical Society, AAS Meeting #228
Poster

Teaching Experience

- Substitute Lecturer in AST 101 — Spring & Fall 2017
- Teaching Assistant, AST 101 — Spring 2017
- Teaching Associate, AST 109 Lab — Spring & Fall 2017
- Teaching Assistant, SCI 230 Electricity and Magnetism — Fall 2016
- Teaching Assistant, SCI 220 Mechanics — Spring 2016

Software

- Python, Keck Data Reduction Pipeline, Source Extractor, Swarp, Scamp, IDL, C, Matlab, Mathematica, LaTeX.

Observing and Software Experience

- Keck/ESI echellette spectroscopy of quasar and galaxy pairs (2 nights)
- Mt. Laguna 40-inch imaging of supernova targets and Landolt Survey (10 nights)
- Modeled and explored Big Bang Nucleosynthesis in Mathematica.

Affiliations

Secretary, Women in STEM at SDSU Club — Spring 2017 to Spring 2018
President, Physics and Astronomy Club — Fall 2015 to Spring 2016
Junior Member American Astronomical Society, **ID** 50807 — Fall 2015 to Present

Outreach

Ask a Physicist — Spring 2017-Present

- Reoccurring invited speaker to Coronado High School, CA. Lecture Introductory and AP Physics classes on various topics in Astronomy and College barriers as well as additional open Questions & Answer forum in between lunch recess.

Mount Laguna Observatory Summer Visitors Program — Summer 2017

- Presented lecture on research activity at SDSU, followed by a guided tour of the night sky using the Mt. Laguna Observatory 21-inch Buller telescope.