Bayu J. Wilson

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Education

University of California, Riverside, CA — Expected 2025
Ph.D. Physics

University of California, Riverside, CA — March 2021
M.S. Physics

University of Washington, Seattle, WA — June 2019
B.S. Astronomy & Physics with minor in Mathematics

Research Experience

Interests: reionization - intergalatic medium - quasar spectroscopy

Ionization Front Fluorescence at the tail-end of reionization — September 2021 – Present
Advisor: Dr. Anson D'Aloisio — *Riverside, CA*

- Modeled ionization front fluorescence using hydrodynamics+radiative transfer simulations
- Predicted the detectability of reionization in various models with current/future instruments

Thermal History of Intergalactic Gas — August 2018 – September 2019
Advisor: Dr. Matthew McQuinn — *Seattle, WA*

- Developed pipeline in Python to measure power spectra from VLT/XSHOOTER quasar spectra
- Measured Lyβ and Lyα-Lyβ power spectrum that constrains thermal history models of the intergalactic medium

How does the Lyα Profile depend on Galaxy Properties? — June 2017 – August 2017
Advisor: Dr. Jorryt Matthee — *Leiden, NL*

- Designed image reduction pipeline for observations with Canada-France-Hawaii Telescope's MegaCam instrument
- Found that extended emission around Lyα emitting galaxies are most consistent with resonant scattering models

Teaching Experience

Teaching Assistant — March 2020 – September 2021

- Instructed undergraduate students virtually through introductory physics labs

CLUE Physics Tutor — September 2016 – June 2019

- Tutored hundreds of physics students on a drop-in basis

Outreach

Virtual Outreach — January 2021 – Present

- Developed astronomy activities to engage youth in science virtually

Mobile Planetarium Committee — September 2018 – June 2019

- Found committee to increase diversity in astronomy via engaging planetarium presentations for middle school students in the Seattle Public School District

Publications

A measurement of the Lyβ forest power spectrum and its cross with the Lyα forest in X-Shooter XQ-100

- **B. Wilson**, V. Iršič, and M. McQuinn. (2021), Monthly Notices of the Royal Astronomical Society, Volume 509, Issue 2, January 2022, Pages 2423–2442. https://arxiv.org/pdf/2106.04837.pdf

Awards

Chancellor's Distinguished Fellowship — September 2019
Behr Outreach Award — March 2017
Mary Gates Research Scholarship — January 2017
Annual Dean's List — 2016-2019

Technical Skills

Languages: Python, C/C++, SQL, LaTeX, HTML/CSS
Libraries: pandas, NumPy, Matplotlib, Scikit-Learn