

Matthew C Wilde

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PhD student at the University of Washington with expertise and interests in galaxy evolution and computational data analysis methods to infer and interpret models of our Universe using current and next-generation surveys.

Education

University of Washington **Seattle, WA**
Ph.D. Astronomy *2015–Jun 2022 (expected)*
Dissertation: Mapping the CGM: Connecting Galaxies to their Environment

University of Texas, Austin **Austin, TX**
BS Physics w/ Honors *2005–2010*

Research Experience

Research Assistant **Seattle, WA**
University of Washington *2017 –*
Research under Professor Jessica Werk on spectroscopic surveys to investigate the circumgalactic medium, galaxy evolution, the connection to the cosmic web, and Bayesian inference

NSF-IGERT Fellow **Seattle, WA**
eScience Department, University of Washington *2016–2019*
machine-learning, data-driven models, data-visualization, Bayesian statistics

Research Assistant **Seattle, WA**
University of Washington *2015–2017*
Research under Prof. Matt McQuinn on galaxy clustering and redshift estimation, cosmology

Research Assistant **New York, NY**
American Museum of Natural History *2013–2015*
Research under Prof. Mike Shara on the identification of Wolf-Rayet and CV stars with Gemini spectroscopy and HST imaging.

Research Assistant **New York, NY**
American Museum of Natural History *2010–2013*
Research with Dr. Sebastien Lepine spectral typing and classifying low-mass stars for exoplanet follow-up. Created spectroscopic catalog of low-mass binary stars.

Research Assistant **Austin, TX**
University of Texas *2009–2010*
Research with Prof. Volker Bromm on exploring the effects of magnetic fields on the mass of Pop III stars.

Employment History

NASA-Student Research Mentoring Program Educator *2010-2015*
American Museum of Natural History
Taught astronomy after-school classes to a diverse cohorts of advanced high school students who were awarded entry into the program.

Grants & Awards

Microsoft Azure Cloud Computing Award: \$10,000
NSF - Integrative Graduate Education and Research Traineeship (IGERT): 4 years of funding.

Mentoring Experience

Student Quasar Absorption Diagnosticians **UW**
Werk SQuAD *2017-Present*

Led a group of 20 undergraduate researchers to analyze and identify absorption lines in QSO spectra, analyze thousands of galaxy spectra to verify redshift and morphological type, and verify Voigt profile fitting on the QSO absorption lines, related to the CGM² survey.

Alexandre Ramirez & Caleb Wilkins

Pre-Majors in Astronomy Program

Investigated multi-component analysis of QSO absorption lines fit with the automated Voigt profile fitting software, *veeper*.

UW

2019

Apurva Goel & Sophia Taylor

Pre-Majors in Astronomy Program

Explored optical galaxy spectra to verify redshift and spectral type of galaxies from the CGM² survey.

UW

2018

Myrka Cuji, Shadia Farah & Khadija Patterson

NASA-SRMP

Explored flare activity in low mass stars by analyzing their optical spectra.

AMNH

2012

Seminars & Conference Presentations

239th Meeting of the American Astronomical Society

Dissertation Talk

SLC, UT

Jan. 2022

Lunch Talk Seminar

Invited Talk (Online)

ASU

Mar. 2021

Lunch Talk Seminar

Invited Talk (Online)

NCSU

Feb. 2021

237th Meeting of the American Astronomical Society

Contributed Talk (Online)

Online

Jan. 2021

Fundamentals of Gaseous Halos - KITP

Contributed Talk (Online)

UCSB

Winter 2021

IGM2018

Poster

Kashiwa, Japan

Sept 2018

Skills

Programming Languages: Proficient in Python.

Also experience with Julia, R, IDL, Mathematica, L^AT_EX, HTML.

Analysis Tools: Pytorch, JAX, DASK, Bokeh, D3.js, scikit-learn, pandas, git.

Observing Experience:

40+ nights Optical/Near-Infrared Imaging and Spectroscopy at MDM Observatory, Kitt Peak, AZ.

References

Prof. Jessica Werk

Department of Astronomy

University of Washington BOX 351850 Seattle WA 98195

jwerk@uw.edu

Prof. J. Xavier Prochaska

Astronomy & Astrophysics Department

UC Santa Cruz, 1156 High St., Santa Cruz, CA 95064

xavier@ucolick.org

Prof. Julianne Dalcanton

Center for Computational Astrophysics

Flatiron Institute 162 5th Ave New York, NY 10010

jdalcanton@flatironinstitute.org

Publications

[Link to ADS](#)

Refereed.....

7. *The Slime-Mold VAC: A 3D Density Field of SDSS Galaxy Catalogs*
Matthew C. Wilde, Oscar Elek, Joseph N. Burchett, et al.
in progress
6. *CGM² + CASBaH: The Mass and Redshift Dependence of the Extent of the CGM*
Matthew C. Wilde, Jessica K. Werk, Todd M. Tripp, Kirill Tchernyshyov, Joseph N. Burchett, J. Xavier Prochaska, Nicolas Tejos, Nicolas Lehner, Rongmon Bordoloi, John M. O'Meara, Jason Tumlinson
in progress
5. *The Seventeenth Data Release of the Sloan Digital Sky Surveys: Complete Release of MaNGA, MaStar and APOGEE-2 Data*
Abdurro'uf, [+337 Authors], **Matthew C. Wilde**.
Submitted to ApJ Supl.; [arXiv:2112.02026]
4. *The CGM² Survey: Circumgalactic O IV From Dwarf to Massive Star-Forming Galaxies*
Kirill Tchernyshyov, Jessica K. Werk, **Matthew C. Wilde**, J. Xavier Prochaska, Todd M. Tripp, Joseph N. Burchett, Rongmon Bordoloi, J. Christopher Howk, Nicolas Lehner, John M. O'Meara, Nicolas Tejos, Jason Tumlinson
Submitted to ApJ; [arXiv:2110.13167]
3. *CGM² I: The Extent of the Circumgalactic Medium Traced by Neutral Hydrogen*
Matthew C. Wilde, Jessica K. Werk, Joseph N. Burchett, J. Xavier Prochaska, Kirill Tchernyshyov, Todd M. Tripp, Nicolas Tejos, Nicolas Lehner, Rongmon Bordoloi, John M. O'Meara, Jason Tumlinson
The Astrophysical Journal, 912, 9 (2021)
2. *The first optical spectra of Wolf-Rayet stars in M101 revealed with Gemini/GMOS*
Joanna. L. Pledger, Michael. M. Shara, **Matthew C. Wilde**, Paul. A. Crowther, K. S. Long, David. Zurek, Anthony. F. J. Moffat
Monthly Notices of the Royal Astronomical Society, 473, 1 (2018)
1. *A Spectroscopic Catalog of the Brightest (J<9) M Dwarfs in the Northern Sky*
Sebastien Lepine, Eric J. Hilton, Andrew W. Mann, **Matthew C. Wilde**, Barbara Rojas-Ayala, Kelle L. Cruz, Eric Gaidos
The Astronomical Journal, 145, 102 (2013)

Conference Proceedings/Abstracts.....

- o *Metallicity Diagnostics of Galaxies in the CGM² Survey*
Mercedes S. Thompson*, Jessica K. Werk, **Matthew C. Wilde**, Werk SQuAD
American Astronomical Society, AAS Meeting 235, American Astronomical Society meeting 235, 205, 124 (2020)
- o *CGM²: COS+Gemini Mapping of the Circumgalactic Medium*
Matthew C. Wilde, Jessica K. Werk, J. Xavier. Prochaska
American Astronomical Society, AAS Meeting 233, 355, 14 (2019)
- o *A Comprehensive Search for Cataclysmic Variables in 47 Tucanae*
Matthew C. Wilde, Michael M. Shara
American Astronomical Society, AAS Meeting 225, 449, 18 (2015)
- o *Recalibration of the M star ξ Metallicity Index Using Common Proper Motion Systems*
Matthew C. Wilde, Sebastien Lepine
American Astronomical Society, AAS Meeting 219, 345, 17 (2012)

Software.....

- o *Pypell: Python spectroscopic data reduction pipeline*
J. Xavier Prochaska, Joseph Hennawi, Ryan Cooke, Kyle Westfall, Feige Wang, Emanuele Paolo Farina, Tiffany Hsyu, Asher Wasserman, Alexa Villaume, David Young, Sunil Simha, **Matthew C. Wilde**, Nicolas Tejos, Jacob Isbell, Edward Betts, Brad Holden
Astrophysics Source Code Library, 1911, 4 (2019)