

# HANNAH BISH

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Space Telescope Science Institute  
3700 San Martin Dr, Baltimore MD 21218, USA

## EDUCATION

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<b>University of Washington</b> , Seattle, WA	
Ph.D., Astronomy	2022
Advisor: Prof. Jessica Werk	
Ph.D. Thesis: <i>CGM Gas Flows in the Milky Way</i>	
M.S., Astronomy	2016
<b>Rutgers University</b> , New Brunswick, NJ	
B.S., Astrophysics	2014
Advisor: Prof. Eric Gawiser	
Senior Thesis: <i>Ly-<math>\alpha</math> Emission in High-Redshift Galaxies</i>	

## PROFESSIONAL APPOINTMENTS

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<b>Postdoctoral Fellow</b> , Space Telescope Science Institute, Baltimore MD, USA	2022 - present
Research: <i>3D ISM Mapping Using UV Reflection Nebulae</i>	
Supervisor: Dr. Joshua Peek	
<b>Research Assistant</b> , University of Washington, Seattle WA, USA	2016 - 2022
Research: <i>Kinematics &amp; Structure of Gas Flows in the Galactic Halo</i>	
Advisor: Prof. Jessica Werk	
<b>Teaching Assistant</b> , University of Washington, Seattle WA, USA	2014 - 2016
Courses Taught: Intro Astronomy (ASTR 101), The Planets (ASTR 150)	
<b>Research Assistant</b> , Rutgers University, New Brunswick NJ, USA	2012 - 2014
Research: <i>Ly-<math>\alpha</math> Emission Strength in Star-Forming Galaxies</i>	
Advisor: Prof. Eric Gawiser	
<b>REU Student</b> , American Museum of Natural History, New York NY, USA	2010
Research: <i>High Proper Motion Stars in the SUPERBLINK Survey</i>	
Advisor: Prof. Sebastien Lepine	

## TEACHING, MENTORING, AND OUTREACH

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<i>Volunteer</i> , Math Alliance Graduate Recruiting for Underrepresented Students	2021
<i>Mentor</i> , Pre-Major in Astronomy Program (Pre-MAP), University of Washington	2016 - 2020
Supervised research of four undergraduate students	
<i>Invited Speaker</i> , Everett Astronomical Society, Everett WA	2019
<i>Invited Speaker</i> , Astronomy on Tap, Seattle WA	2019
<i>Volunteer</i> , Meany Middle School Astronomy Outreach, Seattle WA	2019
<i>Organizer</i> , EquiTea Journal Club, University of Washington	2017 - 2019
Planned monthly discussions and workshops about issues of equity and inclusion	
<i>Volunteer</i> , ARCS Educational Astronomy for Children & Parents, Seattle WA	2017
<i>Volunteer</i> , Planetarium Presenter for Visiting Groups, University of Washington	2016 - 2017

<i>Guest Lecturer, Astronomy Course for Middle School Girls, University of Washington</i>	2016
<i>Teaching Assistant, University of Washington</i>	2014 - 2016
<i>ASTR 101: Intro Astronomy, four terms</i>	
<i>ASTR 150: The Planets, two terms</i>	

## HONORS AND AWARDS

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Co-I, HST Proposal (HST-GO-16679), 71 orbits	2021
Title: <i>Mainly on the Plane: Solving the Milky Way CGM Anomaly with Low-Latitude QSOs</i>	
Graduate Student Prize for Research Excellence, University of Washington	2019
Graduate Student Presentation Award, Wolfe Symposium in Astrophysics	2018
Co-I, HST Proposal (HST-GO-15154), 17 orbits	2017
Title: <i>Tracing Gas Flows from Halo to Disk: Observing the Milky Way's Galactic Fountain</i>	
ARCS Foundation Graduate Fellowship	2014 - 2017
Magna cum laude, Rutgers University	2014
Honors thesis in Astrophysics, Rutgers University	2014
Aresty Research Center Grant, Rutgers University	2013
Richard J. Plano Summer Research Internship Award	2013
Rutgers University Academic Excellence Award	2013

## PRESENTATIONS

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### ORAL:

AAS #236 205.03 - <i>QuaStar: A First Look at the Milky Way's Hidden CGM</i>	2020
Wolfe Symposium in Astrophysics - <i>Milky Way Gas Kinematics at the Disk-Halo Interface</i>	2018
MUSYC LAE Meeting - <i>SED Properties of <math>z \sim 2-3</math> LAEs</i>	2013
Rutgers University - <i>MCMC SED Fitting in CANDELS</i>	2013
Tri-State Astronomy Conference - <i>Physical Properties of LAEs at <math>z = 2.1</math></i>	2013
CANDELS Team Meeting - <i>To Stack or Not to Stack: SED Properties of <math>z=2.1</math> LAEs</i>	2013
MUSYC LAE Meeting - <i>SpeedyMC Results for <math>z=2.1</math> LAEs with CANDELS SEDs</i>	2012

### POSTERS:

AAS #225 143.55 - <i>What Determines the Strength of Ly<math>\alpha</math> Emission in Star-Forming Galaxies?</i>	2015
AAS #223 145.05 - <i>To Stack or Not to Stack: Physical Properties of LAEs at <math>z = 2.1</math></i>	2014
Aresty Research Symposium - <i>To Stack or Not to Stack: Physical Properties of LAEs at <math>z = 2.1</math></i>	2014
AAS #221 147.32 - <i>Physical Properties of Lyman Alpha Emitters in CANDELS</i>	2013

## JOURNAL ARTICLES

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### FIRST AUTHOR:

1. **Bish, H.V.**, Werk, J.K., Di Teodoro, E.M., Peek, J.E.G., Putman, M.E., Zheng, Y. “*Differential Low-Velocity Accretion at the Milky Way's Disk-Halo Interface*” (in prep.)
2. **Bish, H.V.**, Werk, J.K., Peek, J.E.G., Putman, M.E., Zheng, Y. “*QuaStar: Measuring the Milky Way's Obscured Low-Velocity Circumgalactic Medium*” 2021, ApJ, 912, 8

3. **Bish, H.V.**, Werk, J.K., Prochaska, J.X.; Rubin, K.H.R.; Zheng, Y.; O’Meara, J.M.; Deason, A.J. “*Galactic Gas Flows from Halo to Disk: Tomography and Kinematics at the Milky Way’s Disk-Halo Interface*” 2019, ApJ, 882, 76

## CO-AUTHORED:

1. Werk, J.K., Tchernyshyov, K., **Bish, H.V.** “*Discovery of a Sample of Quasars Behind the Galactic Plane*” (in prep.)  
– Contribution: Carried out four half-nights of observations, reduced data for catalog.
2. Werk, J.K., Rubin, K.H.R., **Bish, H.V.**; Prochaska, J.X.; Zheng, Y.; O’Meara, J.M.; Lenz, D.; Hummels, C.; Deason, A.J. “*The Nature of Ionized Gas in the Milky Way Galactic Fountain*” 2019, ApJ, 887, 89  
– Contribution: Data reduction and analysis of low ions, two figures, scientific discussion.
3. Vargas, C.J., **Bish, H.V.**, Acquaviva, V., Gawiser, E.J., Finkelstein, S.L., Ciardullo, R., Ashby, M., Feldmeier, J., Ferguson, H., Gronwall, C., Guaita, L., Hagen, A., Koekemoer, A., Kurczynski, P., Newman, J., & Padilla, N. “*To Stack or Not to Stack: Spectral Energy Distribution Properties of Ly-Emitting Galaxies at  $z=2.1$* ”. 2013, ApJ, 783, 26.  
– Contribution: SED fitting and primary data analysis, six figures, scientific discussion.

## SKILLS

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Spectroscopic Analysis Techniques

Observing experience, including Keck HIRES & Apache Point Observatory 3.5-m DIS

SED Fitting

Data Visualization

Languages: Python, IDL, HTML, D3

## REFERENCES

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### **Jessica K. Werk**

jwerk@uw.edu

Associate Professor

Department of Astronomy, University of Washington

### **Joshua E. G. Peek**

jegpeek@stsci.edu

Associate Astronomer, Project Scientist

Data Science Mission Office, Space Telescope Science Institute

### **Jason Xavier Prochaska**

xavier@ucolick.org

Professor of Astronomy & Astrophysics

Department of Astronomy & Astrophysics, University of California, Santa Cruz