

# Dr. Nell Byler

AUSTRALIAN NATIONAL UNIVERSITY · RESEARCH SCHOOL OF ASTRONOMY AND ASTROPHYSICS  
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## RESEARCH INTERESTS

Interstellar Medium · Galaxy Evolution · Star Formation  
Stellar Evolution Models · Chemical Enrichment

## Education

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### UNIVERSITY OF WASHINGTON

2017 **Ph.D. in Astronomy**  
2013 **M.S. in Astronomy**

### WELLESLEY COLLEGE

2011 **B.A. in Physics**, John Charles Duncan Prize in Astronomy, Sigma Xi research honors.

## Research Experience

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### ASTRO 3D Postdoctoral Fellowship — Australian National University

2018 – Present

COLLABORATORS: LISA KEWLEY

- Galaxy evolution, ISM, UV properties of star-forming galaxies

### Doctoral Research — University of Washington

2014 – 2017

COLLABORATORS: JULIANNE DALCANTON (ADVISER), CHARLIE CONROY

- Thesis: Building galaxy models with self-consistent prescriptions for stellar and nebular emission

### Graduate Research — University of Washington

2014 – 2018

COLLABORATORS: JULIANNE DALCANTON, DAN WEISZ

- Calibrating SPS models using resolved star and integrated light observations of galaxies

### NSF EAPSI Fellow — University of Tokyo, Kavli IPMU

Summer 2013

COLLABORATORS: KEVIN BUNDY

- SPS codes in 2D: fitting techniques for integral field spectroscopy.

### Graduate Research — Instrumentation Shop, University of Washington

2012 – 2013

COLLABORATORS: NICK MACDONALD

- MaNGA hardware metrology for IFU ferrules
- MaNGA first light: Assisted during MaNGA prototype hardware observing run at APO to demonstrate instrumentation and observing procedures.

### Graduate Research — University of Washington

2012 – 2014

COLLABORATORS: JULIANNE DALCANTON, PHIL ROSENFELD

- Constraining late-stage stellar evolution models with Red Clump and AGB bump stars in M31 (PHAT).

### Undergraduate Research — Harvard-Smithsonian Center for Astrophysics

2010 – 2011

COLLABORATORS: ANIL SETH

- Stellar Populations in Globular Clusters: Used spectroscopy to separate chemically and kinematically distinct subpopulations in massive globular clusters.

## Grants & Proposals as Science P.I.

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| 2017 | <b>HST AR-15010 (\$86K)</b> , “PHAT+MaNGA: Using resolved stellar populations to improve the recovery of star formation histories from galaxy spectra” |
| 2016 | <b>After-Sloan-IV proposal (Senior Personnel)</b> , “The Dynamic Ranger: A Multi-Scale Survey of Galaxies”   |
| 2015 | <b>HST AR-14283 (\$83K)</b> , “Detangling Galaxy Spectra: A Baseline Calibration Using Resolved Stars”   |
| 2015 | <b>Royalties Research Fund Grant (\$27K)</b> , “Beyond stars: Modeling the light from galaxies”  |
| 2015 | <b>MaNGA Ancillary Program</b> , “MaNGA Resolved Stellar Populations”  |
| 2013 | <b>NSF EAPSI Fellow (\$5k + travel and lodging)</b> , “Refining Stellar Population Synthesis Models”   |

## Presentations

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### INVITED TALKS

2018	<b>U. Sydney colloquium</b>	Sydney, Australia
2018	<b>UNSW colloquium</b>	Sydney, Australia
2018	<b>Swinburne University colloquium</b>	Melbourne, Australia
2016	<b>Workshop: Galaxies Near and Far</b>	Santa Rosa, CA
2016	<b>Spectral Fitting Workshop: FSPS + MaNGA</b>	Tokyo, Japan

### CONTRIBUTED TALKS

2018	<b>Extremely Large Eyes on the Early Universe</b>	UCLA, USA
2018	<b>Gas Fuelling of Galaxy Structures Across Cosmic Time</b>	Perth, Australia
2018	<b>Emission Line Galaxies workshop</b>	Teruel, Spain
2018	<b>PHAT workshop</b>	Ringberg, Germany
2016	<b>SDSS-IV Collaboration Meeting</b>	Madison, WI
2016	<b>Interplay between Local and Global Processes in Galaxies</b>	Cozumel, Mexico
2015	<b>Fitting Stars, CMDs, &amp; Galaxies Workshop</b>	Rockport, MA
2015	<b>AAS Winter Meeting</b> ( <i>poster</i> )	Seattle, WA
2014	<b>IAU 309</b> ( <i>poster</i> )	Vienna, Austria
2013	<b>NSF EAPSI awardees conference</b> ( <i>poster</i> )	Tokyo, Japan

## Service & Committees

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2019	<b>ANU paperflash discussion</b> , Organizer & Discussion Lead
2018	<b>RSAA Summer Research Scholarships</b> , Scholarship Selection Committee Member
2016	<b>Department Curriculum Review Committee</b> , Graduate Student Representative
2015	<b>Diversity Journal Club</b> , Organizer & Discussion Leader
2014	<b>CAPhEINE (weekly arXiv discussion)</b> , Organizer & Discussion Leader
2012	<b>Graduate and Professional Student Senate</b> , Senator

## Teaching Experience

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<b>Upward Bound Astronomy Section Instructor</b>	Summer 2012
• Designed coursework and lead daily sections during 6-week program.	
<b>Teaching Assistant: Astronomy 480</b>	2015 – 2016
• Senior-level undergraduate course on data reduction techniques. Organized course material and lead lecture on coding practices. 2 quarters.	
• Planning and supervising observing runs for term projects.	
<b>Teaching Assistant: Astronomy 101, 150</b>	2011 – 2014
• Introductory undergraduate courses. Lead labs and activities, reviewed lecture material for ~ 60 students twice per week. 6 quarters total.	

## Outreach

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<b>Astronomy on Tap, Seattle</b>	2015 – Present
• Event co-organizer; satellite location co-founder.	
• Logo and poster design.	
<b>Pre-Major in Astronomy Program (Pre-MAP)</b>	2012 – Present
• Diversity Journal Club Chair: organized inclusion-centered discussions and presentations.	
• Community building: organized annual retreats to VLBA site in Brewster, WA; LIGO Hanford Observatory.	
<b>UW Mobile Planetarium</b>	2011 – Present
• Designed and executed curriculum for summer program at East African Community Center.	
• Integrating student-lead planetarium presentations into high school physics classes.	
• Incorporating UWMP into STEM-related activities: science fairs, space day, math festivals.	

**Numerous public talks: science camp for middle school girls, Olympic National Park, Nerd Nite, EMP museum.**

## Publications

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10. **Byler, N.**, Dalcanton, J. J., Conroy, C., Johnson, B. D., Choi, J., Dotter, A., & Rosenfield, P. (*ApJ accepted*). “LIER-like emission lines from post-AGB stars” *arXiv*, arXiv:1904.10978. [ADS](#).
9. James, B., et al. *including N. Byler* (2019). “Astro2020 Science White Paper: Spatially Resolved UV Nebular Diagnostics in Star-Forming Galaxies,” *arXiv*, arXiv:1903.06678. [ADS](#).
8. Leitherer, C., **Byler, N.**, Lee, J. C., & Levesque, E. M. (2018). “Physical Properties of II Zw 40’s Super Star Cluster and Nebula: New Insights and Puzzles from UV Spectroscopy,” *ApJ*, 865, 55. [ADS](#).
7. **Byler, N.**, Dalcanton, J. J., Conroy, C., Johnson, B. D., Levesque, E. M., & Berg, D. A. (2018). “Stellar and Nebular Diagnostics in the Ultraviolet for Star-forming Galaxies,” *ApJ*, 863, 14. [ADS](#).
6. **Byler, N.**, Dalcanton, J. J., Conroy, C., & Johnson, B. D. (2017). “Nebular Continuum and Line Emission in Stellar Population Synthesis Models,” *ApJ*, 840, 44. [ADS](#).
5. Choi, J., Conroy, C., & **Byler, N.** (2017). “The Evolution and Properties of Rotating Massive Star Populations,” *ApJ*, 838, 159. [ADS](#).
4. Leja, J., Johnson, B. D., Conroy, C., van Dokkum, P. G., & **Byler, N.** (2017). “Deriving Physical Properties from Broad-band Photometry with Prospector: Description of the Model and a Demonstration of its Accuracy Using 129 Galaxies in the Local Universe,” *ApJ*, 837, 170. [ADS](#).
3. Drory, N., et al. *including N. Byler* (2015). “The MaNGA Integral Field Unit Fiber Feed System for the Sloan 2.5 m Telescope,” *AJ*, 149, 77. [ADS](#).
2. Bundy, K., et al. *including N. Byler* (2015). “Overview of the SDSS-IV MaNGA Survey: Mapping nearby Galaxies at Apache Point Observatory,” *ApJ*, 798, 7. [ADS](#).
1. Williams, B. F., et al. *including N. Byler* (2014). “The Panchromatic Hubble Andromeda Treasury. X. Ultraviolet to Infrared Photometry of 117 Million Equidistant Stars,” *ApJS*, 215, 9. [ADS](#).