

# Dr. Nell Byler

AUSTRALIAN NATIONAL UNIVERSITY · RESEARCH SCHOOL OF ASTRONOMY AND ASTROPHYSICS  
MT. STROMLO OBSERVATORY, COTTER RD, WESTON CREEK, ACT 2611

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## RESEARCH INTERESTS

Galaxy Evolution · Star Formation · Ionized Gas  
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 Fellow — Australian National University, RSAA** 2018 – Present

COLLABORATORS: LISA KEWLEY

- Galaxy evolution, 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 – Present

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

## Presentations

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2016	<b>Workshop: Galaxies Near and Far</b>	Santa Rosa, CA
2016	<b>Spectral Fitting Workshop: FSPS + MaNGA</b>	Tokyo, Japan
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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2016	<b>Department Curriculum Review Committee</b> , Graduate Student Representative
2015	<b>Diversity Journal Club</b> , Organizer & Discussion Leader
2014	<b>CAPHINE (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.	
<b>Numerous public talks: science camp for middle school girls, Olympic National Park, Nerd Nite, EMP museum.</b>	

## Publications

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7. **Byler, N.**, Dalcanton, J. J., Conroy, C., Johnson, B. D., Levesque, E. M., & Berg, D. A. (*accepted*). “Stellar and nebular diagnostics in the UV for star-forming galaxies.” [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](#).