

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

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

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.

2019 **European Southern Observatory (40hrs)**, VLT/X-Shooter - 105.20JM
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

INVITED TALKS

2019	Galaxy Evolution project review <i>ASTRO 3D science meeting</i>	Sydney, Australia
2018	U. Sydney colloquium	Sydney, Australia
2018	UNSW colloquium	Sydney, Australia
2018	Swinburne University colloquium	Melbourne, Australia
2016	Nebular Emission Overview <i>Galaxies Near and Far workshop</i>	Santa Rosa, CA
2016	SFH recovery with FSPS + MaNGA <i>Spectral Fitting Workshop</i>	Tokyo, Japan

CONTRIBUTED TALKS

2019	Extremely Large Eyes on the Early Universe	UCLA, USA
2019	Gas Fuelling of Galaxy Structures Across Cosmic Time	Perth, Australia
2018	Emission Line Galaxies workshop	Teruel, Spain
2018	PHAT workshop	Ringberg, Germany
2016	SDSS-IV Collaboration Meeting	Madison, WI
2016	Interplay between Local and Global Processes in Galaxies	Cozumel, Mexico
2015	Fitting Stars, CMDs, & Galaxies Workshop	Rockport, MA
2015	AAS Winter Meeting (<i>poster</i>)	Seattle, WA
2014	IAU 309 (<i>poster</i>)	Vienna, Austria
2013	NSF EAPSI awardees conference (<i>poster</i>)	Tokyo, Japan

Service & Committees

2019	Hubble Space Telescope Time Allocation Committee , Invited Panel Member
2019	Galaxy Evolution Project Deputy Chair , ASTRO 3D
2019	ANU paper discussion , Organizer & Discussion Lead
2018	RSAA Summer Research Scholarships , Scholarship Selection Committee Member
2016	Department Curriculum Review Committee , Graduate Student Representative
2015	Diversity Journal Club , Organizer & Discussion Leader
2014	CAPHINE (weekly arXiv discussion) , Organizer & Discussion Leader
2012	Graduate and Professional Student Senate , Senator

Teaching Experience

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

Outreach

Astronomy on Tap, Seattle	2015 – 2017
• Event co-organizer; satellite location co-founder; logo and poster design.	
Pre-Major in Astronomy Program (Pre-MAP)	2012 – 2017
• Diversity Journal Club Chair: organized inclusion-centered discussions and presentations.	
• Community building: organized annual retreats to VLBA site in Brewster, WA; LIGO Hanford Observatory.	
UW Mobile Planetarium	2011 – 2017
• 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

14. **Byler, N.**, Kewley, L. J., Rigby, J. R., Acharyya, A., Berg, D. A., Bayliss, M., & Sharon, K. (2020). "A comparison of UV and optical metallicities in star-forming galaxies," *ApJ*, accepted.
13. McLeod, A. F., et al. *including N. Byler* (2019). "Stellar Feedback and Resolved Stellar IFU Spectroscopy in the nearby Spiral Galaxy NGC 300," *arXiv*, arXiv:1910.11270.ADS.
12. **Byler, N.**, Dalcanton, J. J., Conroy, C., Johnson, B. D., Choi, J., Dotter, A., & Rosenfield, P. (2019). "Self-consistent Predictions for LIER-like Emission Lines from Post-AGB Stars," *AJ*, 158, 2. ADS.
11. D'Agostino, J. J., Kewley, L. J., Groves, B., **Byler, N.**, Sutherland, R. S., Nicholls, D., Leitherer, C., & Stanway, E. R. (2019). "Comparison of Theoretical Starburst Photoionization Models for Optical Diagnostics," *ApJ*, 878, 2. ADS.
10. James, B., et al. *including N. Byler* (2019). "ASTRO2020 Science White Paper: Spatially Resolved UV Nebular Diagnostics in Star-Forming Galaxies," *BAAS*, 51, 199. ADS.
9. Aguado, D. S., et al. *including N. Byler* (2019). "The Fifteenth Data Release of the Sloan Digital Sky Surveys: First Release of MaNGA-derived Quantities, Data Visualization Tools, and Stellar Library," *ApJS*, 240, 23. 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.