Nell Byler

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Research Interests

Modelling the resolved and unresolved properties of galaxies
Galaxy Evolution · Star Formation · Diffuse Gas
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.

Grants & Proposals

As Science P.I.

2017 **HST AR-15010 ($86K)**, "PHAT+MaNGA: Using resolved stellar populations to improve the recovery of star formation histories from galaxy spectra"
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"

As Co-I

2016 **After-Sloan-IV proposal (Senior Personnel)**, "The Dynamic Ranger: A Multi-Scale Survey of Galaxies"
2016 **MUSE observing program**, "A systematic multi-tracer study of the HII regions in NGC 300"

Research Experience

Doctoral Research — University of Washington 2014 – Present

Collaborators: Julianne Dalcanton (Adviser), Dan Weisz

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

Graduate Research — University of Washington 2014 – Present

Collaborators: Julianne Dalcanton, Charlie Conroy

- Integrating nebular emission model in SPS code FSPS.

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 Rosenfield

- 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.

Undergraduate Research — National Optical Astronomical Observatory Summer 2010

Collaborators: Dara Norman

- NSF REU program. Assessed the spatial distribution of AGN in galaxy clusters using optical, X-ray, and infrared data.

Presentations

Contributed Talks

2016	**Workshop: Galaxies Near and Far**	Santa Rosa, CA
2016	**Spectral Fitting Workshop: FSPS + MaNGA**	Tokyo, Japan
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

Posters

2015	**AAS Winter Meeting**	Seattle, WA
2014	**IAU 309**	Vienna, Austria
2013	**NSF EAPSI awardees conference**	Tokyo, Japan

Service & Committees

- 2016 **Department Curriculum Review Committee**, Graduate Student Representative
- 2015 **Diversity Journal Club**, Organizer & Discussion Leader
- 2014 **CAphEINE (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 and lead lecture on coding practices. 2 quarters.
- Planning and supervising observing runs for term projects.

Teaching Assistant: Astronomy 101, 150 2011 – 2014

- Introductory undergraduate courses. Lead labs and activities, reviewed lecture material for $\sim$ 60 students twice per week. 6 quarters total.

Outreach

Astronomy on Tap, Seattle 2015 – Present

- Event co-organizer; satellite location co-founder.
- Logo and poster design.

Pre-Major in Astronomy Program (Pre-MAP) 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.

UW Mobile Planetarium 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

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 Broadband 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.