

Ava Elise Polzin

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EDUCATION

Yale University, New Haven, CT, 2019 – present

- Ph.D. in Astronomy, anticipated 2025
- Dean’s Emerging Scholars Fellowship

Northwestern University, Evanston, IL, 2016 – 2018

- Weinberg College of Arts and Sciences: Physics & Astronomy major (3.7 GPA), Earth & Planetary Sciences minor
- Graduated, B.A. with Honors, December 2018
- Senior honors thesis: *Exploring the Eclipsing Binary Yield of the Large Synoptic Survey Telescope* with Professor Aaron Geller

University of Southern California (USC), Los Angeles, CA, 2014 – 2016

- Resident Honors Program
- Thematic Option (interdisciplinary humanities honors program)
- Thornton School of Music: Music Industry, B.S. track
- Dornsife College of Letters, Arts and Sciences: Geological Sciences, B.S. track

Fulbright Summer Institute, Queen’s University Belfast, Northern Ireland, 2015

RESEARCH EXPERIENCE

Graduate Research Assistant, Yale University Department of Physics

Supervisor: Professor Laura Newburgh, June 2020 – Present

- Working on the Canadian Hydrogen Intensity Mapping Experiment (CHIME) pipeline.

Graduate Research Assistant, Yale University Department of Astronomy

Supervisor: Professor Pieter van Dokkum, August 2019 – Present

- Currently working on an observational, extragalactic project using archival Hubble Space Telescope (HST) data.

Research Assistant, Margutti Group (PI: Professor Raffaella Margutti), Center for Interdisciplinary Exploration & Research in Astrophysics (CIERA), Northwestern University

Supervisor: Professor Raffaella Margutti, January 2019 – July 2019

- Worked on a review of X-ray transients in duration-luminosity phase space.

Large Synoptic Survey Telescope (LSST) Intern, Center for Interdisciplinary Exploration & Research in Astrophysics (CIERA), Northwestern University

Supervisors: Professor Aaron Geller, Dr. Adam Miller, June 2017 – July 2019

- Use Python code (based in the packages `ellc` and `gatspy`) with a full-scale galactic simulation to determine a new minimum prediction for the LSST’s eclipsing binary yield over its ten-year run. This research will be fleshed out by determining the factors that impact binary detection and looking further at the idea of accurate identification of both binaries and their periods.

Visiting Undergraduate Researcher, Newburgh Lab (PI: Professor Laura Newburgh), Yale University Department of Physics

Supervisors: Professor Laura Newburgh, Dr. Benjamin Saliwanchik, July 2018 – September 2018

- Experimental cosmology research, focusing on drone calibrations for the Hydrogen Intensity and Real-time Analysis eXperiment (HIRAX). This work will begin to establish the precision of drone-based beam mapping and allow for calibration of static dishes in a large radio array.

Undergraduate Research Assistant, Micro-X Lab (Figueroa Group – PI: Dr. Encatali Figueroa-Feliciano), Northwestern University

Supervisors: David Goldfinger, Dr. Antonia Hubbard, December 2016 – June 2017

- Triaged projects, ran and recorded computer tests for Transition Edge Sensors (TES), created a helium consumption simulation for the lab's dewars, and some hardware soldering. At supervisor suggestion, learned MatLab and Python outside of lab.

Undergraduate Research Volunteer, Nealson (Environmental Microbiology) Lab (PI: Dr. Ken Nealson), USC Dornsife College of Letters, Arts and Sciences

Supervisor: Casey Barr, Spring 2016

- Trained for planned research in environmental microbiology scheduled to be carried out at Jet Propulsion Lab, Pasadena, California, Summer 2016. Made agar/sulfur plates, mixed medium, isolated samples for re-plating, ran autoclave and did necessary acid baths to ensure absolute sterility, fully organized and cataloged chemical shelves (keeping them in alphabetical order by non-reactive category), and assisted in setting up some basic electrochemical tests.

TEACHING & MENTORSHIP EXPERIENCE

Lead Instructor, Yale Young Global Scholars, Yale University Office of International Affairs

Supervisor: Dr. Jemilat Salami-Oyenuga, Summer 2020

- Designed and implemented seminars about astrophysics and the history of astrophysics targeted at advanced high school students (e.g., *Introduction to Extragalactic Astrophysics* and *Astronomy Sans the White Dudes*).

Teaching Assistant, Yale Summer Program in Astrophysics, Yale University Department of Astronomy

Supervisor: Dr. Michael Faison, Summers 2019 and 2020

- Mentor students in their research projects, aid with assignments (both in a tutoring capacity and a grading one), and serve as telescope Time Allocation Committee (TAC). During Summer 2019, oversaw/ran nightly observing sessions.

Mentor, Polygence

April 2020 – Present

- Mentor high schoolers in manageable research projects designed to give them a sense of astrophysical research. Emphasis placed on developing familiarity/comfort with coding, data analysis, and critical thinking.

Graduate Teaching Fellow, Yale University Department of Astronomy

August 2019 – Present

- ASTR 110 (Planets & Stars) with Dr. Michael Faison, Fall 2019 (4.6/5.0)
- ASTR 170 (Introduction to Cosmology) with Professor Priya Natarajan, Spring 2020

Grader, Northwestern University Department of Physics & Astronomy

Supervisor: Professor Nathaniel Stern, January 2019 – March 2019

- Grading for Physics 330-2 (Classical Mechanics), Winter 2019.

**OTHER
PERTINENT
EXPERIENCE**

Peer-Guided Study Group Facilitator, Academic Support and Learning Advancement (Searle Center for Advancing Learning & Teaching, Weinberg College), Northwestern University

Supervisor: Borislava Miltcheva, September 2017 – March 2019

- Lead small group sessions supplemental to general physics courses. Worked with Professor David Taylor’s and Professor Art Schmidt’s classes for Fall 2017 and Professor Deborah Brown’s classes for Winter 2018, Spring 2018, Fall 2018, Winter 2019, and Spring 2019.
- Selected to serve on student panel at annual ASLA New Faculty Workshop (September 21, 2018) and returning student leader panel at annual Peer Leader Training (September 26, 2018).

N’Cat Tutor, Northwestern Athletics, Northwestern University

Supervisor: Shuji Otsuka, September 2017 – March 2019

- Tutor student athletes in physics, astronomy, math, music, and earth science courses.

Learning Assistant, Searle Center for Advancing Learning & Teaching, Northwestern University

Supervisor: Professor Zosia Krusberg, April 2018 – June 2018

- Attended all lectures and discussions to provide TA-like support to students during introductory physics class. Participated in Professor Zosia Krusberg’s Physics 135-3 pilot of the LA program.

Dearborn Observatory Telescope Operator, Northwestern University Department of Physics & Astronomy

Supervisor: Professor Michael Smutko, May 2017 – July 2019 (March – May 2017 spent in training)

- Run telescope, host events, answer questions pertaining to the field and observatory.

Organizing Committee Member, 2019 Conference for Undergraduate Women in Physics (CUWiP), Northwestern University Society of Women in Physics & Astronomy, Department of Physics & Astronomy
February 2018 - January 2019

Heavy Hitters Music Group Intern, Glendale CA

Supervisors: Cindy Badell-Slaughter (company president) and Nikole Luebbe, Summer 2016

- Broad internship in film/TV and publishing industry combined creative (A&R, music reviewing, working with artists) with pitching music and also licensing/clearance from the publishing side (and for interest in sync), metadata, promotion and marketing, and royalty collection.
- Listened to and helped to select new artists to sign to the Emmy Award winning catalog, as well as music to be pitched to film and TV “creatives”, put together professional playlists and descriptions, organized and edited audio files and cue sheet information, enhanced and helped run social media and website (set Heavy Hitters up on LinkedIn and maintained existing professional sites), actively contributed in creative meetings and to lists for music supervisors, and did general research (on existing and upcoming projects, contact and marketing info, and new music supervisors).

Lakota Cultural Exchange Program (LCEP), 2009 – Present

thelakotaculturalexchangeprogram.org and LCEP Facebook page

- Most recently, in March 2019, brought a group of middle school girls from Pine Ridge Reservation, SD to Northwestern for similar programming. Funded through a second grant received from Northwestern’s OIDI and a grant received from the NU Center for Native American & Indigenous Research.
- In September 2018, brought a group of middle school girls to Northwestern from the Bad River Ojibwe reservation in Ashland, WI for a weekend of STEM enrichment and cultural exchange. Funded through a grant received from the Northwestern University Office of Institutional Diversity & Inclusion (OIDI) and supported by faculty, staff, and graduate students in the Department of Physics & Astronomy.
- Previous iterations: Cultural exchange for girls from Pine Ridge to attend the Thousand Waves Martial Arts & Self-Defense Center empowerment and self-defense camp, Camp Kokoro (2009), opportunity extended for girls to engage in the beloved music camp, Girls Rock! Chicago (2014 – 2015). When Girls Rock! Pine Ridge was established in 2016, efforts shifted to the establishment of year-round music programs in both the Little Wound and Red Shirt Schools on Pine Ridge. With the generous support of a private philanthropist, both schools were fully equipped with all instruments necessary to begin music programs (in cooperation with district plans for visiting arts teacher traveling between schools).

**PUBLICATIONS
& PRESENTATIONS**

In preparation for submission to The Astronomical Journal: Polzin A, Margutti, R. Consolidating Transient X-ray Phenomena in the Duration-Luminosity Phase Space. 2020.

In preparation for submission to The Astrophysical Journal: Geller A, Polzin A, Bowen A, Miller A. Exploring an Improved Method for Determining LSSTs Eclipsing Binary Yield. 2020.

Polzin A, Geller A, Miller A, Breivik K. Exploring the Eclipsing Binary Yield of the Large Synoptic Survey Telescope. Poster session presented at the 233rd American Astronomical Society Meeting; 2019 Jan. 9; Seattle, WA.

Polzin A, Geller A, Miller A, Breivik K. Exploring the Eclipsing Binary Yield of the Large Synoptic Survey Telescope. Poster session presented at the Greater Chicago Undergraduate Women in Physics Workshop (University of Chicago); 2018 Sept. 30; Chicago, IL.

- Received award for best poster

“Examining drone calibrations for HIRAX”, Wright Laboratory Undergraduate Research Symposium, Yale University, 2018 July 30

Polzin A, Geller A, Miller A, Breivik K. Exploring an Improved Method for Determining LSSTs Eclipsing Binary Yield. Poster session presented at the Adler Planetarium and Northwestern Department of Physics & Astronomy for the 2017 CIERA REU; 2017 Aug. 17 – 18; Evanston, IL and Chicago, IL.

Polzin A. Becoming Mara Mandinga: The Value of Self-Definition and Its Journey in *Of Love and Other Demons*. Paper presented at What’s Past Is Prologue: 18th Annual Thematic Option Research Conference; 2015 April 14 – 15; Los Angeles, CA.

HONORS & AWARDS

Honorable Mention, 2019 National Science Foundation (NSF) Graduate Research Fellowship Program (GRFP)

Northwestern University Center for Native American & Indigenous Research Event Co-Sponsorship Grant: Spring and Summer 2019

- Award in the amount of \$1000, which facilitated the Lakota Stellar STEM Weekend for middle school-age girls from Pine Ridge Reservation.

Northwestern University Office of Institutional Diversity & Inclusion Event Sponsorship Grant: Spring and Summer 2018, Spring and Summer 2019

- Two awards, each in the amount of \$2500, which was sufficient to cover all expenses (travel, food, housing, program costs, incidentals) for Stellar STEM Weekend for middle school girls from the Bad River Ojibwe band and partially funded another Stellar STEM Weekend for half a dozen Lakota girls from Pine Ridge Reservation.

Weinberg College of Arts & Sciences Research Grant: Summer 2018

- Award in the amount of \$3500 to facilitate summer research completed in the Yale University Department of Physics: *Optimizations on the HIRAX radio array*.

NASA Illinois Space Grant: 2017 – 2018

- Award in the amount of \$3000 to facilitate academic year research in the space sciences.

DAAD Research Internship in Science and Engineering: awarded for Summer 2017 (declined in order to participate in 2017 Northwestern REU cohort)

Bruce Fishkin Scholarship Recipient: 2014 – 2018

- Full scholarship (including tuition, housing, books, food, and incidental costs) for four years of university education. Applied funding at both the University of Southern California and Northwestern University.

USC Deans and University Scholarships: 2014 – 2016

- Quarter tuition (and additional several thousand dollar supplement) merit-based scholarship attendant to admittance to the University of Southern California and its Resident Honors Program.

USC Academic Achievement Award: Spring and Fall 2015

Fulbright Summer Institute: awarded for 2015

- Via the US-UK Fulbright Commission. Opportunity to spend a portion of the summer at Queen's University Belfast learning about conflict resolution and cultural history in a region famous for its profound turmoil and, subsequently, remarkable initiatives to mitigate sectarianism and heal a population traumatized by the Troubles.
- Served as a reader for 2019 Summer Institute applications.

USC Dornsife Summer Undergraduate Research Fund Recipient: Summer 2015

- Award in the amount of \$3000 to fund summer research. Project in conjunction with the Thematic Option Interdisciplinary Humanities Honors Program and Fulbright Summer Institute: *9/11 and the Troubles – Representations, Ramifications, Responses, and Realities*.

HERLead (formerly ANNpower)/Vital Voices Grant: received for independently established Lakota Cultural Exchange Program: 2014 – 2015

- Two awards in the amount of \$2500 to support exchange and enrichment efforts with girls on Pine Ridge Reservation, South Dakota.

HERLead (formerly ANNpower)/Vital Voices Leadership Forum Fellow:
2014

**MEMBERSHIPS
& ACTIVITIES**

Women in Physics+, Yale University, 2019 – Present
– Serving as advocacy co-chair from October 2019.

Sigma Xi ($\Sigma\Xi$), Associate Member, Spring 2019 – Present

American Physical Society, 2018 – Present

Sigma Pi Sigma ($\Sigma\Pi\Sigma$), Northwestern University, 2018 – Present

American Astronomical Society, Graduate Student Member, 2017 – Present

Weinberg College Student Advisory Board, selected as Physics & Astronomy representative, Fall 2018

Society of Physics Students, Northwestern University, 2016 – 2019

- Elected President for 2017-2018 year; assumed duties April 2017
- Initiatives include establishing fundraising effort in conjunction with Dearborn Observatory (selling observatory-branded gear to fund outreach), renovating office and repurposing the space to help it serve as an undergraduate major lounge, planning monthly undergraduate events for prospective and current majors and minors, and working to enhance involvement with department.

Society of Women in Physics and Astronomy, Northwestern University, 2016 – 2019

Sigma Gamma Epsilon ($\Sigma\Gamma E$), 2015

Trojan Marching Band, USC: mellophone, 2014 – 2016

USC Men's Crew: coxswain, 2014 – 2016