# Stella Koch Ocker

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## Education

**Cornell Univerity** — Ithaca, NY
Ph.D. in Astronomy, Advisor: Prof. James Cordes — 2018–Current

**Cornell University** — Ithaca, NY
M.S. in Astronomy, Advisor: Prof. James Cordes — 2018–2020

**Oberlin College** — Oberlin, OH
B.A. with High Honors in Physics — 2014–2018

- Concentration: Astrophysics
- Minor: English

## Research Interests

- Radio transients, including fast radio bursts and pulsars
- Precision pulsar timing and its applications, including gravitational wave detection and tests of General Relativity
- The interstellar medium, including plasma turbulence and radio wave propagation

## Scholarships, Grants, and Awards

- NASA Outer Heliosphere Guest Investigator — 2020–2023
- Cranson and Edna B. Shelley Outstanding Teaching Assistant Award — 2020
- Honorable Mention, NSF Graduate Research Fellowship Competition — 2020
- Cornell Graduate Student Fellowship — 2018–2019
- Cornell Graduate Travel Grant — 2019
- Carl E. Howe Prize in Physics, Oberlin College — 2018
- Oberlin Physics & Astronomy Department Honors Program — 2017–2018
- Robert Weinstock Prize for Outstanding Achievement in Physics Coursework — 2017
- John Frederick Oberlin Merit Scholarship — 2014–2018
- Valedictorian, Sir Francis Drake High School — 2014
- Ellsworth Hagen Scholarship, Drake Scholarship Foundation — 2014

## Research Experience

**Cornell University** — Ithaca, NY
Astronomy Graduate Research Assistant, Advisor: Prof. James Cordes — 2018–current

**Oberlin College** — Oberlin, OH
Physics & Astronomy Honors Program, Advisor: Prof. Dan Stinebring — 2017–2018

- Testing the Production of Scintillation Arcs with PSR B1133+16

**McGill Space Institute** — Montreal, Canada
Undergraduate Research Assistant, Advisor: Prof. Victoria Kaspi — Summer 2016 & Summer 2017

- Modeling FRB 121102 as a Poisson Process
- Searching for Neutral Hydrogen Absorption in FRB 121102

**San Francisco State University** San Francisco, CA
Remote Research Assistant, Advisor: Prof. Stephen Kane 2016–2017

- Modeling the Retrieval of Lens Star Spectra During Microlensing Events

**Oberlin College** Oberlin, OH
Undergraduate Research Assistant, Advisor: Prof. Dan Stinebring 2015–2016

- Testing Physical Models for Scintillation Arcs

**National Solar Observatory** Tucson, AZ
REU Program, Advisor: Dr. Gordon Petrie Summer 2015

- Characterizing the Effects of Spatial Smoothing on Solar Magnetic Helicity Parameters and the Solar Hemispheric Helicity Sign Rule

## Publications

1. Ocker SK, Cordes JM, Chatterjee S. Electron density structure of the local Galactic disk. *ApJ* 897:2. doi:10.3847/1538-4357/ab98f9 (2020)

2. Stinebring DR, Rickett BJ, Ocker SK. The frequency dependence of scintillation arc thickness in pulsar B1133+16. *ApJ*. 870:2. https://doi.org/10.3847/1538-4357/aaef80 (2019)

3. Ocker SK. Testing the production of scintillation arcs with the pulsar B1133+16. Electronic Thesis. Oberlin College, 2018. *OhioLINK Electronic Theses and Dissertations Center*. http://rave.ohiolink.edu/etdc/view?acc_num=oberlin1526565414057674

4. Ocker SK, Petrie G. The effects of spatial smoothing on solar magnetic helicity parameters and the hemispheric helicity sign rule. *ApJ*. 832:162. doi:10.3847/0004-637X/832/2/162 (2016)

## Talks and Posters

1. Ocker SK, Cordes JM, Chatterjee S, Lam M, Jennings R. Assessing Chromatic Arrival Time Perturbations for NANOGrav's Error Budget. Poster. 235th AAS Meeting 2020

2. Ocker SK, Rickett BJ, Stinebring D. A Multi-Frequency Scintillation Arc Study of Pulsar B1133+16. Poster. 233rd AAS Meeting 2019

3. Ocker SK, Stinebring D. Multiple scintillation arcs in a nearby pulsar, B1133+16: crucial clues? Talk. University of Toronto Scintillometry with Pulsar VLBI Workshop 2017

4. Ocker SK, Petrie G. The effects of spatial smoothing on solar magnetic helicity and the hemispheric helicity sign rule. Poster. 47th AAS/Solar Physics Division Meeting 2016

## Affiliations

- NASA Outer Heliosphere Guest Investigator, Voyager Interstellar Mission 2020–2023
- Associate Member, North American Nanohertz Observatory for Gravitational Waves (NANOGrav) 2019-present
- Graduate Student Member, American Astronomical Society (AAS) 2018-present

## Teaching

- **Head Teaching Assistant** at Cornell University — Spring 2020
  *Our Solar System (ASTRO 1102/1104)*
- **Teaching Assistant** at Cornell University — Fall 2019
  *From New Worlds to Black Holes (ASTRO 1101/1103)*
- **Teaching Assistant** at Oberlin College — Spring 2017
  *Electricity, Magnetism, & Thermodynamics (PHYS 111)*
- **Teaching Assistant** at Oberlin College — Fall 2016
  *Mechanics & Relativity (PHYS 110)*
- **Tutor** at Oberlin College — 2015–2016
  *Quantitative Skills Center*

## Skills

- **Programming:** Python, Mathematica, LaTex, IDL, Fortran

## Languages

- **French:** Intermediate
- **Hebrew:** Beginner
- **German:** Beginner

## Professional Service

- President, Cornell Astronomy Graduate Network — 2020–2021
  *Contributed to creation of Cornell Astronomy Graduate Student Handbook and the Astronomy Graduate Peer Mentoring Network*
- Secretary & Outreach Coordinator, Cornell Astronomy Graduate Network — 2019–2020
  *Organized the weekly graduate student and post-doc seminar; lead organizer of all outreach events involving graduate students; coordinating graduate student lectures at Ithaca public libraries*
- Student Representative, Oberlin College Department of Physics & Astronomy — Fall 2016 –Spring 2018
  *Attended all faculty meetings; led student committee for 2017 faculty search; organized Women/Trans/Nonbinary in Physics Tea; organized annual departmental t-shirt contest; awarded Carl E. Howe Prize in Physics for service as student representative*

## Outreach

- Volunteer, Museum in the Dark, Museum of the Earth, Ithaca NY — October 2020
- Head Organizer, Museum in the Dark, Museum of the Earth, Ithaca NY — October 2019
- Organizer, Astronomy event with Cornell STEP program — July 2019
- Program Leader, 4-H Career Explorations, Cornell University — June 2019
- Coordinator, Kids' Science Day at the Big Red Barn, Cornell University — May 2019
- Volunteer, Expanding Your Horizons, Cornell University — April 2019