**Catherine Zucker**
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## EDUCATION

**University of Virginia**
*B.A. in Astronomy-Physics and B.A. in History* — Spring 2015

**Harvard University**
*M.A. in Astronomy and Astrophysics* — Fall 2017

*PhD in Astronomy and Astrophysics* — May 2020 (anticipated)
Advisors: Alyssa Goodman and Douglas Finkbeiner

## RESEARCH INTERESTS

- Delineating the spiral structure of the Milky Way
- Characterizing the physical properties of the largest-scale filaments in the interstellar medium of our Galaxy via observations and simulations
- Mapping the distribution of the Milky Way's dust in 3D using stellar photometry
- Combining gas and dust measurements to determine distances to local molecular clouds

## PUBLICATIONS

### First Author

- **Zucker, C**; Schlafly, E.; Green, G.; Speagle, J.; Portillo, S.; Finkbeiner, D.; Goodman, A. 2018c. *ApJ*, 869, 83. Mapping Distances across the Perseus Molecular Cloud Using CO Observations, Stellar Photometry, and Gaia DR2 Parallax Measurements.
- **Zucker, C** Chen, H. H. 2018b. *ApJ*, 864, 162. RadFil: A Python Package for Building and Fitting Radial Profiles for Interstellar Filaments.
- **Zucker, C**; Battersby, C.; Goodman, A. 2018a. *ApJ*, 864, 2. The Physical Properties of Large-scale Galactic Filaments.
- **Zucker, C**; Walker, L.M..; Johnson, K.; Gallagher, S.; Alatalo, K.; Tzanavaris, P. 2016. *ApJ*, 821, 113. Hierarchical Formation in Action: Characterizing Accelerated Galaxy Evolution in Compact Groups using Whole-Sky WISE Data.
- **Zucker, C**; Battersby, C.; Goodman, A. 2015. *ApJ*, 815, 23. The Skeleton of the Milky Way.

### Contributing Author

- Monsch, K.; Pineda, J.; Liu, H.; Chen, H.; **Zucker,C.**; Pattle, K.; Offner, S.; Di Francesco, J.; Ginsburg, A.; Ercolano, B.; Arce, H.; Friesen, R.; Kirk, H.; Caselli, P.; Goodman, A. 2018. *ApJ*, 861, 77. Dense Gas Kinematics and a Narrow Filament in the Orion A OMC1 Region using $NH_3$.
- Lisenfeld, U.; Alatalo, K.; **Zucker, C.**; Appleton, P. N.; Gallagher, S.; Guillard, P.; Johnson, K.. 2017. *A&A*, 607, A110. The role of molecular gas in galaxy transition in compact groups

- Walker, L.M.; Butterfield, N.; Johnson, K.; **Zucker, C.**; Gallagher, S.; Konstantopoulos, I., Hornschemeier, A.; Tzanavaris, P.; Charlton, J. 2013. *ApJ*, 775,129. The Optical Green Valley vs Mid-IR Canyon in Compact Groups

## PRESENTATIONS

### Contributed Talks

- Harvard-Heidelberg Meeting on Star Formation (Heidelberg, Germany; December 2018), *Better Distances to Local Molecular Clouds with Gaia (Starting with Perseus)*
- ITC Luncheon Talk (Cambridge, MA; November 2018), *Large-scale Galactic Filaments – Shock and Shear in the Milky Way?*
- The Interstellar Filament Paradigm (Nagoya, Japan; November 2018), *The Physical Properties of Observed (and Synthetic!) Large-Scale Galactic Filaments*
- The Milky Way in the Age of Gaia (Orsay, France; October 2018), *Better Distances to Local Molecular Clouds with Gaia*
- MIT Haystack Lunch Talk (Westford, MA; August 2018), *Visualization and Outreach with glue and the WorldWide Telescope*
- The Olympian Symposium (Paralia, Greece; May 2018), *The Physical Properties of Large-Scale Galactic Filaments*
- AAS Splinter Session (Washington DC; January 2018), *Better Data Visualization and Exploration with GLUE*
- Sun, Stars, and Galaxies Lunch Talk (Manchester, UK; October 2017), *The Physical Properties of Large-Scale Galactic Filaments*
- Harvard-Smithsonian Center for Astrophysics Astrostats Day (Cambridge, MA; September 2017), *Interactive multi-dimensional data exploration and linking with the* `glue` *visualization software*
- Galactic Star Formation with Surveys Conference (Heidelberg, Germany; July 2017), *The Physical Properties of Large-Scale Galactic Filaments*
- Dunlap Institute for Astronomy & Astrophysics (Toronto, Canada; May 2017), *The Physical Properties of Large-Scale Galactic Filaments*
- Dunlap Institute for Astronomy & Astrophysics (Toronto, Canada; May 2017), *Interactive multi-dimensional data exploration and linking with the* `glue` *visualization software*
- New England Regional Star Formation Meeting (Cambridge, MA; January 2016), *The Skeleton of the Milky Way*
- Filamentary Structure in Molecular Clouds Workshop (Charlottesville, VA; October 2014), *The Skeleton of the Milky Way*
- 2014 SAO Astronomy Intern Symposium (Cambridge, MA; August 2014), *The Milky Way Skeleton*

### Posters

- Harvard-Heidelberg Meeting on Star Formation (Heidelberg, Germany; November 2016), *The Physical Properties of Large-Scale Galactic Filaments*
- Via Lactea: The Milky Way as a Star Formation Engine (Rome, Italy; September 2016), *The Physical Properties of Large-Scale Galactic Filaments*

- The Milky Way in Molecular Clouds Meeting (Charlottesvile, VA; April 2016); *The Skeleton of the Milky Way*
- 225 AAS (January 2015; Seattle, WA) *The Skeleton of the Milky Way*
- VA Space Grant Research Conference (Hampton, VA; April 2014) *Hierarchical Formation in Action: Characterizing Accelerated Galaxy Evolution in Compact Groups*
- 221st AAS (January 2013; Long Beach, CA) *Hierarchical Formation in Action: Characterizing Accelerated Galaxy Evolution in Compact Groups*

## OBSERVING EXPERIENCE

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|---|---|
| Cerro Tololo Observatory, Chile (Blanco 4m) (2 nights) | August 2018 |
| Cerro Tololo Observatory, Chile (Blanco 4m) (3 nights) | February 2018 |
| MMT Observatory; Tucson, AZ (4 nights) | August 2014 |
| Kitt Peak Observatory (Bok 90"); Tucson, AZ (5 nights) | December 2012 |

## SELECTED AWARDS

- Harvard Astronomy Departmental Teaching Award — Spring 2018
- Certificate of Distinction in Teaching, Harvard University — Spring 2018
- La Serena School for Data Science Full Scholarship — Summer 2017
- NSF Graduate Research Fellowship Award — Fall 2016-Fall 2019
- John P. and Carol J. Merrill Graduate Fellowship, Harvard University — Fall 2015-Present
- Peirce Fellowship, Harvard Astronomy — Fall 2015-Fall 2018
- UVA Undergraduate Physics Research Symposium, 1st Place — Fall 2014
- Vyssotsky Prize, University of Virginia Astronomy — Spring 2014
- Double Hoo Research Award, University of Virginia — Spring 2014
- Intermediate Honors, University of Virginia — Fall 2013
- Virginia Space Grant Consortium Research Fellowship — Summer 2013–Spring 2014
- Kate Cabell Claiborne Cox Scholarship, University of Virginia History — Spring 2013
- Harrison Undergraduate Research Award, University of Virginia — Summer 2013–Spring 2014
- Echols Scholarship Fund Grant, University of Virginia — Summer 2012
- Small Research and Travel Grant, University of Virginia — Summer 2012
- Wolfe Undergraduate Docent Award, University of Virginia — Spring 2012
- Echols Scholar, University of Virginia — Fall 2011–Fall 2015

## SERVICE

- Referee for Astronomy & Astrophysics, The Astronomical Journal — Fall 2018 - Present
- Astronomy Rewind, Volunteer Lead — Fall 2018 - Present
- Public Talk, New Hampshire Astronomical Society — Spring 2018
- Cambridge Explores the Universe Volunteer, Harvard University — Spring 2016, 2017, 2018
- Development of MilkyWay3D.com Galactic Plane Mapper Tool — Fall 2016
- Harvard College Undergraduate Research Association Conference Invited Speaker — Fall 2016
- Interview with Science News on the Milky Way Skeleton — December 2015
- Interview with Space.com on the Milky Way Skeleton — January 2015

- *Dark Skies, Bright Kids Planetarium Lead*, University of Virginia March 2012–May 2015
- Harrison Institute for American History Docent, University of Virginia September 2011–May 2015

## TEACHING

- Teaching Fellow; Astronomy 17—Galactic and Extragalactic Astronomy. Harvard University. Fall 2017

## COMPUTING

**Programming Languages**: Python
**Tools**: LaTeX, glue, ds9, git