

Samantha Berek

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EDUCATION

University of Toronto PhD candidate in Astronomy and Astrophysics	2020 – present
<ul style="list-style-type: none">Advisors: Gwendolyn Eadie and Joshua Speagle<i>Thesis</i>: Understanding Globular Cluster Populations and Their Host Galaxy Properties with Statistical Models	
Yale University B.S. in Astrophysics and Anthropology, <i>cum laude</i>	2016 – 2020

FELLOWSHIPS AND AWARDS

Data Sciences Institute Doctoral Student Fellowship 75,000 CAD (<i>25,000 / year, 3 years</i>)	2024 – present
Connaught International Scholarship for Doctoral Students 50,000 CAD (<i>10,000 CAD / year, 5 years</i>)	2020 – present
Jui Lin Yen Award for Outstanding Research Contribution 1000 CAD	2024
Astrostatistics Student Paper Competition Finalist 100 USD	2024
School of Graduate Studies Conference Grant 900 CAD	2023
Frank S. Hogg Memorial Fellowship 5,000 CAD	2021 – 2022
Beckwith Prize in Astronomy 1,000 USD	2020
Michele Dufault Scholarship for Women in Science	2018-2019
Brooke Owens Fellow	Class of 2018
Samuel Hodgkinson Scholarship	2016-2018

PUBLICATIONS

SIGNIFICANT CONTRIBUTION

- Berek, S.** et. al. *Should zeros count? Modeling the galaxy-globular cluster scaling relation with(out) zero-inflated count models*, 2024, ApJ
- Berek, S.**, Reina-Campos, M., et. al. *Galactic properties that favour star cluster formation: a statistical view*, 2023, MNRAS
- Berek, S.** et al. *The HERBAL model: A hierarchical errors-in-variables Bayesian lognormal hurdle model for galactic globular cluster populations*, 2023, ApJ
- Lehner, N., **Berek, S.**, Howk, J.C., et. al. *Project AMIGA: The Circumgalactic Medium of Andromeda.*, 2020, ApJ
- Booth, S.L., **Berek, S.**, Green, B., et. al. *Measuring and Learning from Success and Innovation in Early Stage Technology Development: A Case Study of NASA's Center Innovation Fund*. 2018. AIAA SPACE and Astronautics Forum and Expedition

OTHER PUBLICATIONS

1. Li, D. et al (incl. **Berek, S.**) *Discovery of two ultra-diffuse galaxies with unusually bright globular cluster luminosity functions via a mark-dependently thinned point process (MATHPOP)*, 2024, ApJ [submitted, in review]
2. Butler, V. et al (incl. **Berek, S.**) *TIME: the Tomographic Ionized-carbon Mapping Experiment: an update on design, characterization, and data from the 2022 commissioning observations*, 2024, SPIE proceedings
3. Sasserville, G., Hlavacek-Larrondo, J., **Berek, S.**, et. al. *A novel approach to understanding the link between supermassive black holes and host galaxies*, 2024, ApJ [submitted, in review]

INVITED SEMINAR/JOURNAL CLUB TALKS

Rubin Observatory Star Clusters Science Working Group	2024
Astronomy Lunch Talk Series (TASTY) (<i>University of Toronto</i>)	2023
Great Lakes Clusters and Streams Conference Workshop (<i>University of Michigan, Ann Arbor, MI</i>)	2023
Department of Statistical Sciences Brown Bag Seminar (<i>University of Toronto</i>)	2023
The Local Galaxy Group (<i>University of Toronto</i>)	2022
Senior Thesis Talk Series (<i>Yale University</i>)	2020
REU Symposium (<i>University of Notre Dame</i>)	2019

CONFERENCE TALKS

Joint Statistical Meetings 2024 (<i>Portland, OR</i>)	2024
Small Galaxies, Cosmic Questions (<i>Durham, UK</i>)	2024
Globular Clusters and their Tidal Tails: from the Milky Way to the Local Group (<i>Toronto, ON</i>)	2024
Astrostatistics in Canada and Beyond (<i>Banff, AB</i>)	2023
Great Lakes Clusters and Streams (<i>University of Michigan, Ann Arbor, MI</i>)	2023
A multi-wavelength view on globular clusters near and far: from JWST to the ELT (<i>Sexten, Italy</i>)	2023
McMaster Clusters workshop (<i>McMaster University, Hamilton, ON</i>)	2022

POSTERS

Canadian Astronomical Society AGO (<i>Toronto, ON</i>)	2024
Joint Statistical Meetings (<i>Toronto, ON</i>)	2023
235th Meeting of the American Astronomical Society (<i>Honolulu, HI</i>)	2020
Conference for Undergraduate Women in Physics (<i>Yale University</i>)	2020

RESEARCH SUPERVISION

Michelle Denny (undergraduate), co-supervised with Jacqueline Antwi-Danso <i>Project: Counting Massive Galaxies in the Early Universe with JWST</i>	2024
Rufat Ismayilov (undergraduate), primary supervisor <i>Project: Literature review of high-z galaxy discoveries with JWST and alternate cosmologies</i>	2023-2024
Grisha Kit (undergraduate), primary supervisor <i>Project: Literature review of high-z galaxy discoveries with JWST and the UV luminosity function</i>	2023-2024
Shu Yan (Alice) Wang (undergraduate), co-supervised with Josh Speagle <i>Project: Predictive Bayesian model comparison methods with astronomical applications</i>	2023

TEACHING EXPERIENCE

- Course Instructor, AST 199**, University of Toronto 2024
- Astronomy at the Frontier, Spring 2024 (first-year seminar for non-majors)
 - Developed syllabus and course content from scratch, including assignments, lectures, and class activities.
 - Taught class, led office hours, and handled communication with students.
 - Managed a teaching assistant for the course.
- Teaching Assistant, AST 198/199**, University of Toronto 2023
- Astronomy at the Frontier, Fall 2024 (first-year seminar for non-majors)
 - Great Astronomical Issues, Fall 2023 (first-year seminar for non-majors)
 - Assisted with teaching during class and led office hours.
 - Helped with course administration and discussion board/email moderation.
 - Graded assignments and class projects.
- Guest Lecture, AST 199**, University of Toronto 2023
- Astronomy at the Frontier, Fall 2023 (first-year seminar for non-majors)
 - Gave a one hour long guest lecture about dark matter and dark energy to a class of 24 students.
 - Facilitated an article discussion activity after the lecture.
- Teaching Assistant, AST 101/201 series**, University of Toronto 2020 – 2023
- AST101, The Sun and its Neighbors, Fall 2022, Fall 2021
 - AST201, Stars and Galaxies, Summer 2023, Winter 2023, Winter 2022, Winter 2021
 - Taught multiple tutorial sections per semester of 30-40 students each.
 - Ran telescope observing sessions for course projects.
 - Held help sessions and review sessions, and answered student questions on discussion boards/email.
 - Graded class projects, midterms, and final exams.

MENTORING

- Nan Jiang**, University of Toronto (*undergraduate*) 2023-2024
- Esther Wang**, University of Toronto (*undergraduate*) 2022-2023
- Emma Jarvis**, University of Toronto (*undergraduate*) 2021-2022
- Jeff Shen**, University of Toronto (*undergraduate*) 2020-2021

LEADERSHIP AND SERVICE

- Astrostatistics Interest Group of the American Statistical Association, *Secretary/Website Director* 2023-2024
- Globular Clusters and their Tidal Tails Conference, *Local Organizing Committee Member* 2024
- STATSTRO Astrostatistics Workshop, *Organizing Committee Member* 2024
- Graduate Astronomy Student Association (GASA), *Co-President* 2022-2023
- Graduate Astronomy Student Association (GASA), *Secretary* 2021-2022
- UofT Department of Astronomy Training and Mentoring Committee, *Member* 2020-2022
- UofT Graduate Student - Postdoc Mentorship Program, *Graduate Student Chair* 2021-2022
- UofT GASA Graduate Student Peer Mentorship Program, *Chair* 2020-2021
- Graduate Student Course Committee, *Member* 2020-2021
- Astronomy Climate and Diversity Committee, *Member* 2019-2020
- Ask a Brookie Mentor Program, *Co-Founder; Statistics and Data Lead* 2018-2019