

SUMMARY

Research Interests: Astrostatistics and computational astrophysics; high- z AGN, 21cm cosmology, and radio instrumentation.
Publications: 4 as first author (1 in prep), 10 as co-author
Science Talks: 31 total, 6 invited, including 6 scheduled
Outreach Talks: 13 total, 7 invited, 36+ hours of astronomy podcast episodes ([Astro\[sound\]bites Podcast](#))
Science Posters: 15
Mentees: Research (1), Professional (13)

EDUCATION

Ph.D., Physics, **University of Melbourne** December 2022–May 2026 (expected)
 Dissertation: *Bridging Theory and Observation: What Simulations Reveal About High- z Discoveries with JWST*
 Visiting PhD Student at ANU and Swinburne
 Advisor: Stuart Wyithe

M.Sc., Physics, **McGill University** 2022
 Dissertation: *Constraining reionization density fields and ionospheric errors for radio interferometers*
 Advisors: Adrian Liu and Jonathan Sievers

B.A., Astrophysics, **University of California, Berkeley** 2018
Transferred from Diablo Valley College

GRANTS

Co-PI, French-Australian Science and Innovation Collaboration Grant (USD~\$20K)
-Deciphering the mysteries of how the first galaxies formed with Square Kilometre Array-Low and Artificial Intelligence 2025

Mary H. Brown Fund for *Mental Health in Physics Seminars* (CAD \$1.5K) 2021

FELLOWSHIPS

AND

SCHOLARSHIPS

Alan Kenneth Head Travel Grant (AUD \$5K) 2024

Astronomical Society of Australia Student Travel Grant (AUD \$1.5K) 2024

University of Melbourne Women in Physics Scholarship (AUD \$1K) 2023

Melbourne Research Scholarship and Australian Graduate Research Training Program Fellowship (AUD \$140K + AUD \$150K tuition) 2022

ND Goldworthy Scholarship (AUD \$21K) 2023
 -highest-ranked international students in physics

Rowden White Scholarship (AUD \$6.5K) 2022

NSERC NTCO-CREATE Fellowship (CAD \$15K) 2021

McGill Graduate Mobility Award (CAD \$1.5K) 2021

Berkeley Physics Undergraduate Research Scholar (USD \$1000) 2017–2018

UC Berkeley Academic Opportunity Fund (USD \$250) 2017

European Space Agency Young Researcher's Award (€ 200) 2017

SOFTWARE

Programming Languages: Python (10+ years), Bash, C++, and Java.
ML & Stats Tools: numpyro, PyMC3, JAX, Scikit-Learn, and pytorch.

¹Publishing by Sabrina Berger.

HPC: Slurm, MPI, GPU-accelerated workflows
GitHub: <https://github.com/sabrinaastronomy>

INDUSTRY EXPERIENCE	Physicist Intern at Meta (Facebook)	Summer 2021
	Applied ML to predict GPS error classification to $\sim 90\%$ accuracy. Internship project used in Facebook's augmented reality products. Received high-performance feedback from three peers and a manager, leading to a return internship offer.	
	Data Science Intern at NASA Ames	January–May 2019
	Applied conditional Generative Adversarial Networks (cGANs) to clean data from the Transiting Exoplanet Survey Satellite (TESS) pipeline. Produced results comparable to those from traditional data cleaning methods.	
CONFERENCE RESEARCH TALKS (19, 1 scheduled)	High-redshift Galaxy formation at the interface between observations and simulations (Kerala, India)	<i>scheduled</i> Jan 2026
	Exploring the first billion years of the Universe (Port Douglas, Australia)	Sep 2025
	Australian Astronomical Society Meeting (virtual)	July 2025
	SKA Cosmic Dawn/EoR Meeting 2024 (virtual)	July 2024
	Astro3D Legacy Science Meeting (Sydney, Australia)	June 2024
	COSMO 21–Statistical Challenges in 21cm Cosmology (Chania, Greece)	May 2024
	Massive Black Holes in the Early Universe (Kinsale, Ireland)	May 2024
	Nagoya-Melb. Joint Research Workshop on Cosmology (Nagoya, Japan)	Feb 2024
	ANITA ² Meeting (Monash University)	Feb 2024
	JWST@Sesto (virtual)	July 2023
	Shedding new light on the first billion years of the Universe (virtual)	July 2023
	Astro3D Science Meeting (Perth, Western Australia)	June 2023
	Faculty of Science Research Summit (UniMelb)	Feb 2023
	URSI ³ National Radio Science Meeting (virtual)	Jan 2023
	Assembly of the Order of the Octopus (SETI ⁴) Meeting (virtual)	July 2021
	ESA Extreme Habitable Worlds Conference (Noordwijk, Netherlands)	Dec 2017
	Gulf Coast Undergraduate Research Symposium (Rice University)	Oct 2016
	Emerging Researcher National Conference in STEM (Washington D.C.)	Feb 2015
	APS Conference for Undergraduate Women in Physics (UC Santa Cruz)	Jan 2015
	APS Far West Meeting (University of Nevada, Reno)	Oct 2014
SELECTED UNIVERSITY TALKS (6, 5 scheduled, 6/11 invited)	* <i>Galaxies SIG Talk for Habitable Worlds Observatory (virtual)</i>	<i>scheduled, Dec 2025</i>
	* <i>Stanford University KIPAC Seminar (USA)</i>	<i>scheduled, Nov 2025</i>
	MIT MATS Talk (USA)	scheduled, Nov 2025
	Princeton Galaxy Reading Group (USA)	scheduled, Nov 2025
	* <i>Macquarie University Astro Seminar (Sydney, Australia)</i>	<i>scheduled, Oct 2025</i>
	Australian 3D View of Galaxies Seminar Series (virtual)	August 2025
	NRAO Socorro Lunch Talk (Socorro, New Mexico, USA)	May 2025
	* <i>Institut d'Astrophysique Spatiale–Orsay Seminar (Paris, France)</i>	<i>May 2024</i>
	Yale Data Science X Astronomy & Astrophysics Seminar (virtual)	Dec 2023
	* <i>University of Melbourne Student Awards Ceremony Speaker</i>	<i>Aug 2023</i>
	* <i>Indiana University Lunch Talk (virtual)</i>	<i>Oct 2020</i>

² Australian National Institute for Theoretical Astrophysics

³ International Union of Radio Science

⁴ Search for Extraterrestrial Intelligence

* *Invited.*

POSTERS (15)	Inaugural Cosmic Frontier Center Conference (University of Texas, Austin)	May 2025
	Australian Astronomical Society Meeting (Sydney, Australia)	July 2023
	First Light Conference @ MIT (virtual)	June 2023
	NTCO-CREATE Research Symposium (Montréal, Canada)	Jul 2022
	International HPC Summer School (Kobe, Japan)	Jul 2019
	NRAO Radio Frontiers in the Next Decade (Charlottesville, Virginia)	June 2019
	AAS #233 (Seattle, Washington)	Jan 2019
	NRAO Radio Frontiers in the Next Decade (Portland, Oregon)	June 2018
	Emerging Researchers in Exoplanet Science (Penn State University)	June 2018
	Berkeley Physics Undergraduate Research Symposium (UC Berkeley)	April 2018
	Berkeley Physics Undergraduate Research Symposium (UC Berkeley)	April 2017
	APS Conference for Undergraduate Women in Physics (UCLA)	Jan 2017
	AAS #229 (Grapevine, TX)	Jan 2017
	UC Berkeley Undergraduate Astronomy Research Symposium	July 2016
	Conference on Science at Sanford Underground Research Facility (SDSMU)	May 2015
TEACHING EXPERIENCE (University tutor for 7 semesters)	Tutor for <i>Special Relativity</i> , UniMelb (Undergrad Course)	Sem. 2 2023
	Tutor for <i>The Art of Scientific Computing</i> , UniMelb (Grad Course)	Sem. 1/2 2023
	Instructor in Software Engineering for Hackbright Coding Academy	2021–2022
	–Delivered 25 hours of lectures on Python concepts each month.	
	–Provided one-on-one tutoring, mentorship, and project feedback.	
	–Helped 150+ women and non-binary students of all ages learn Python for the first time.	
	Tutor for <i>Astrophysics</i> , McGill (Honors Undergrad/Grad Course)	Fall 2021
	<i>Linux/GitHub Lecture</i> , McDonald Institute Summer for Particle Astrophys.	May 2021
	Tutor for <i>Signal Processing</i> , McGill	Winter 2021/2022
	Tutor for <i>Computational Phys.</i> , McGill (Honors Undergrad/Grad Course)	Fall 2019
	Tutor for <i>Python for Astronomy</i> , UC Berkeley	Winter 2019
	Instructor for Splash Course on Radio Astronomy and SETI, UC Berkeley	Feb 2019
	Reader for <i>Stellar Astrophysics</i> , UC Berkeley	Winter 2018
	100+ Hours of Private Physics, Math, Python Tutor	Jan 2016–
	Tutor for NIH Math Community College Students	2016
	Teacher for ProjectASTRO, Ford Elementary School	Sept 2016–June 2017
	–Developed curriculum and instructed a fifth-grade class in astronomy biweekly	
OUTREACH/ INREACH TALKS (13 total with 7 invited)	Volunteer at Chabot Space and Science Center	2014–2015
	Tutor in Astronomy/Italian, Diablo Valley College	2014–2015
	* <i>Accessibility in Astronomy Workshop Co-Leader at choir (Maine, USA)</i>	July 2025
	* <i>UniMelb Physics Colloquium on Antarctica Flyover</i>	Feb 2025
	* <i>Notre Dame College, (Victoria, Australia) (virtual, 1 hour)</i>	Nov 2024
	Mental Health in Astronomy at MSSS ⁵ (ANU)	Sept 2024
	Skype a Scientist at Clyde Creek Primary School (virtual, 1 hour)	Aug 2024
	Notre Dame College (Victoria, Australia) (virtual, 1 hour)	May 2024
	* <i>Mental Health in Physics to McGill summer students</i>	July, 2022
	Champlain College (Sherbrooke, Québec, Canada) (1 hour)	March 2022
	Fischer Middle School (San Jose, California) (30 min)	May 2021
	* <i>Women of Science Week at Vanier College (virtual) (1 hour)</i>	Oct 2020
	Vanderbilt University Virtual Star Talk (virtual) (15 min)	Sept 2020
	* <i>Machine Learning in Astronomy at Saratoga High School (1 hour)</i>	Feb 2020
	* <i>Khan Lab School (Mountain View, California) (30 min)</i>	April 2019

* *Invited.*

⁵[Mt. Stromlo Student Seminars](#)

RESEARCH MENTORSHIP (1 student)	Arianna Lasinski (Undergrad at University of Toronto), <i>GNSS Beam Calibration</i> 2022-	
NON-RESEARCH MENTORSHIP (13 students)	UniMelb Physics Group Mentor (6 undergrads)	2023
	InGenius Prep Physics Mentor (paid, 2 undergrads)	Aug 2020-Sept 2021
	CAMPARE-HERA Astronomy Minority Partnership Mentor (Iman Fahmy, now a PhD student at UWashington)	2020-2021
	McGill Graduate Association of Physics Mentoring (3 physics undergrads)	2019-2021
	Canadian Science Fair Mentor for Girls (one middle school student)	April-June 2020
LEADERSHIP AND INREACH	<i>*Invited Guest on the LIUniverse Podcast with Dr. Charles Liu</i>	Sept 2025
	Astro[sound]bites Podcast Host/Co-host	April 2022-June 2025
	-More than 30K downloads as of June 2025	
	-36 episodes including:	
	- Breaking the Stigma Around Community College (Part I/II) , co-authored associated astrobite	
	- Indigenous Astronomy (Part I/II)	
	- The Pulsar Boomerang	
	UniMelb Women in Physics Industry Panelist	April 2025
	Reionization in Australia Conference LOC	Dec 2024-
	UniMelb Black Hole Journal Club Founder/Organizer	Dec 2024-
	ANITA ⁶ Student Representative	2023 - 2025
	-LOC and SOC for 2024/2025 ANITA Conferences	
	<i>*UMontréal Astromatic Machine Learning in Astrophysics Workshop Judge</i>	Aug 2022
	McGill Faculty of Science Outreach and Communication Panelist	Jan 2022
	McGill Machine Learning in Astrophysics Journal Club Founder/Organizer	2021-2022
	McGill Graduate Assoc. of Phys.	Jan 2021-Sept 2022
	-Served as Mental Health Officer and Task Force Member, Website Developer	
	-Organized three talks and a workshop, secured \$1500 in funding (100 attendees)	
	McGill Physics Hackathon Co-organizer	August-December 2020
	-Lead organizer for 2020 McGill Physics Hackathon attended by 190 people around the world	
	-Covered in the McGill Reporter	
	-Organized eight coding workshops on Python to Machine Learning attended by more than 200 people	
	McGill Phys. Matters Outreach Coordinator	Jan-Dec 2020
	McGill Cosmology Journal Club Organizer	Jan-Aug 2020
	Canadian Undergraduate Physics Conference Judge	Nov 2019
	Selected participant, Speed Dating with Scientists	
	at Notte dei Ricercatori (Night of the Researchers) (University of Bologna)	2017
	President (Vice-Pres. in 2016) of Society of Phys. Students (UC Berkeley)	2016-2018
	Editor at UC Berkeley Undergraduate Scientific Journal	2015- 2016
OTHER RESEARCH EXPERIENCE	Breakthrough Listen Undergrad Researcher and 2018 UC Berkeley SURF ⁷	2015-2018
	-Research Topic: <i>FRB/SETI pipelines</i> with Vishal Gajjar, Dan Werthimer, and Casey Law. See Li+2020 and Gajjar+2021 .	
	NSF ⁸ REU ⁹ , University of Chicago	2017
	-Research Topic: Rocky exoplanet modeling with Leslie Rogers. Wrote a Python package for self-consistent rocky exoplanet models with thermal effects (Github).	

⁶Australian National Institute for Theoretical Astrophysics

⁷Summer Undergraduate Research Fellowship

⁸National Science Foundation

⁹Research Experience for Undergraduates

	DOE/Italian National Institute of Nuclear Physics Research Exchange Program	2017
	-Research Topic: A study of jet reconstruction algorithms for highly-boosted top quarks with Matteo Negrini.	
	Undergraduate Research Apprenticeship Program, UC Berkeley	2016
	-Research Topic: Cryogenic instrumentation for CMB polarization experiment with POLARBEAR .	
	NSF REU, American Museum of Natural History, NYC	2015
	-Research Topic: <i>Missing satellites problem</i> with Jana Greulich.	
	NSF REU, Texas A&M Commerce	2014
	-Research Topic: Neutron star theory with William Newton. See Newton+2015 .	
OUTREACH TRAINING	Scientell ASTRO 3D Presentation Skills Training Course at USyd	July 2023
	[†] AAS Outreach Workshop – On-the-Spot Feedback	March–May 2021
	[†] AAS Astronomy Ambassadors Workshop	Jan 2019
PROFESSIONAL MEMBERSHIPS	LSST Junior Associate (full data access), Australian Society of Astronomy (ASA)	
LANGUAGES	Fluent in English (Native) and Italian (B2)	
OTHER	Recipient of CorePower Yoga Black, Indigenous, and People of Color Scholarship	

* *Invited.*

[†] By application only and funded.

EXPANDED LEADERSHIP ACTIVITIES

1. **Astro[sound]bites Co-host:** Between 2022-2025, I have co-hosted and managed *astro[sound]bites*, the podcast spinoff of *Astrobites* which now has over 30,000 downloads worldwide. The show expands access to astrophysics by translating cutting-edge research into an accessible and conversational audio format. I have hosted over 36 episodes (more than 50 hours of astronomy discussions), leading conversations on topics such as community college pathways to astrophysics careers, Indigenous astronomy, and mental health in astrophysics.
2. **Mentorship:** Since 2020, I have mentored 15 students both in research and professional development. One mentee I supported through the graduate application process is now a Ph.D. student at the University of Washington (Iman Fahmy), while another (Arianna Lasinski) co-authored one of my first-author publications and is applying to graduate school with my continued guidance.
3. **Teaching:** I have taught Python programming to more than 150 women and non-binary students through an American software engineering bootcamp. Several of my former students now work at major technology companies. I have also taught seven semesters of physics and computing courses across three universities, emphasizing active learning and inclusive pedagogy.
4. **Building Inclusive Research Communities:** In 2024, I founded and continue to organize the Black Hole Journal Club at the University of Melbourne, which attracts more than 25 astrophysicists weekly and was recently described by attendees as "the favorite part of my week because it feels like a fun, inclusive, and supportive place to learn". I also founded the Machine Learning in Astrophysics Journal Club at McGill University, which enabled discussion on publications of the latest AI applications in astronomy.

I co-lead the organization of the 2020 McGill Physics Hackathon, which was attended by 190 hackers worldwide. I led the coordination of eight coding workshops before the hackathon ranging from Python fundamentals to machine learning, attended by over 200 participants. I have served on the Scientific Organizing Committees for three Australian conferences since 2023, including as lead organizer for a high-redshift conference, which brought together more than 80 astronomers from around the world to Australia. I coordinated events to promote student inclusion and assisted with all aspects of conference logistics and planning.

5. **Public Engagement & Training:** As the McGill Physics Outreach Coordinator during the COVID-19 pandemic, I established an international connection between Dyer Observatory at Vanderbilt University and McGill University to host virtual discussions about space and astronomy for public audiences. I have also delivered 13 talks (7 invited) across the United States, Canada, and Australia. I also completed science communication training through the Scientell ASTRO 3D Presentation Skills Course (2023), AAS On-The-Spot-Feedback Outreach Workshop (2021), and AAS Astronomy Ambassadors Workshop (2019).