

Current position

Expecting to graduate in September 2026

PhD Student | Department of Physics & Astronomy, Western University, Canada

2022 - Present

Supervisors: Pauline Barmby, Sarah Gallagher

Topic: The Optical Photometric Variability of Active Galactic Nuclei

Education

MSc in Astronomy & Astrophysics | Observatoire de Paris, France

2021 - 2022

Magistère (MSc) in Fundamental Physics | Université Paris-Saclay, France

2019 - 2022

BSc in Physics | Université Paris-Saclay, France

2017 - 2020

Previous Appointments

Graduate Researcher | Department of Physics, Eng. Physics & Astronomy, Queen's University, Canada

March - June 2022

Supervisor: Kristine Spekkens

Topic: Modelling The Kinematics of Ultra-Diffuse Galaxies

Collaborated with an expert software developer to develop mock datasets to probe ultra-diffuse galaxy structures, focusing on atomic gas distributions and dark matter content.

Conducted analyses similar to those in the astronomy literature to evaluate the reliability of recovered gas velocity dispersion, which was not previously explored.

Discovered that accurate recovery of gas velocity dispersion requires precise inclination data, suggesting caution in claims of galaxies devoid of dark matter.

Presented findings at a national conference (CASCA 2022).

Graduate Researcher | Department of Physics & Astronomy, McMaster University, Canada

May - July 2021

Supervisor: Laura Parker

Topic: Galaxy Evolution in Dense Environments

Worked with large data catalogues to study galaxies undergoing quenching or rejuvenation within galaxy clusters.

Analyzed how the fraction of these galaxies varies with their duration in the cluster environment, finding that it depends on stellar mass but not strongly on time since infall.

Identified transient and rejuvenating galaxies residing in localized regions characterized by intermediate hydrogen gas levels, situating them between quenched and star-forming environments.

Undergraduate Researcher | Laboratoire Gulliver, ESPCI Paris, France

June - August 2020

Supervisor: Matthieu Labousse

Topic: Self-Organization of Walking Drops

Studied self-organization phenomena in several walking drops within simulations.

Conducted detailed analysis of the dynamics, particularly those related to quantum mechanics, which have resulted in notable experimental outcomes.

Investigated systems with multiple drops evolving freely together and identified signs of emerging collective behaviour.

After completing my internship, I conducted additional research over a year and a half during my Masters studies under my supervisor's guidance.

Published our findings in the European Physical Journal.

Publications

3 lead author, 2 co-author articles

Hélias A., Barmby P., Gallagher S. C., Abbassi S., Graham M. J., *"Classifying Quasar Types Without a Spectrum"*, PASP (accepted for publication)

Hélias A., Gallagher S. C., Barmby P., *"Investigating the AGN variability timescale - black hole mass relationship with Gaia, SDSS and ZTF"*, ApJ (2026)

Deg N., Spekkens K., Arora N., Dudley R., White H., Hélias A. et al., **“WALLABY Pilot Survey: Characterizing Low Rotation Kinematically Modelled Galaxies”**, ApJ (2025)

Christie H. S., Hélias A., do Carmo Carvalho M., Barmby P., **“TONGS: A Treasury of Nearby Galaxy Surveys”**, PASP, 136, 3 (2024)

Hélias A., Labousse M., **“Statistical self-organization of an assembly of interacting walking drops in a confining potential”**, EPJE, 46, 29 (2023)

Talks & Posters at Conferences		3 talks, 5 posters
Supermassive Black Holes and Blue Notes Université de Montréal, QC - Poster	July 2026	
CASCA 2026 Annual General Meeting Université de Montréal, QC - Talk	June 2026	
CASCA 2025 Annual General Meeting Saint Mary's University, NS - Poster	June 2025	
The Formation and Early Evolution of Supermassive Black Holes University of Maryland, MD - Talk	November 2024	
CASCA 2024 Annual General Meeting University of Toronto, ON - Poster	June 2024	
Compact Objects in Michigan and Ontario Henry Ford College, Detroit, MI - Talk	May 2024	
CASCA 2023 Annual General Meeting University of British Columbia, Penticton, BC - Poster	June 2023	
CASCA 2022 Annual General Meeting University of Waterloo, ON - Poster	May 2022	

Awards

Teaching Assistant Award of Excellence - 100 CAD Western University	2026
Awarded to Graduate Student Teaching Assistants who use exemplary practices as Demonstrators and Tutors.	
Paul & Kathryn Lycett Graduate Scholarship - 1,000 CAD Western University	2024
Awarded annually to a full-time graduate student, based on academic achievement.	

Leadership, Outreach & EDI Roles

Chair of the CASCA Graduate Student Committee	2024 - 2025
French Translator of the CASCA Graduate Student Committee	2023 - 2024

I was strongly involved in the Graduate Student Committee (GSC) of the Canadian Astronomical Society. With my team:

- We organized the Graduate Student Workshop every year at the Annual General Meeting of the Society. We created networking activities, invited guest speakers, and talked about meaningful topics such as employment outside of academia and how to care for your mental health.
- We created a brand new workshop of four 2-hour sessions on How to Apply to Astronomy Postdocs (GAAP). Throughout the Summer 2025, we invited many guest speakers to talk about the fundamentals of applying to postdoctoral positions, how to write a research proposal, interview preparation and maintaining mental well-being during application season (cascagsc.github.io/gaap2025).
- We wrote the first committee report since the creation of our committee for the Mid-Term Review of the Long Range Plan 2020, to make sure the voices of astronomy graduate students across the country were heard by the CASCA Board.

Skills: I got the chance to develop my leadership skills and to give everyone the opportunity to voice their opinion freely. I am proficient in taking initiatives and working autonomously, or in a team.

Outreach Coordinator of the Cronyn Observatory	2025
Outreach Assistant at the Cronyn Observatory	2023 - 2026

I am strongly involved in the outreach team of the Cronyn Observatory. With my team:

- We organize events all year round where we explain astronomy in simple terms to the general public and school groups of all ages. We run hands-on activities, astronomy demos, and solar/nighttime stargazing with the telescopes.

Skills: I have expertise in public speaking, explaining complex topics to a lay audience, and using various astronomical telescopes.

Graduate Representative of the EDI Committee of the Physics & Astronomy Department	2022 - 2023
I am the original author of the code of conduct that is now adopted by the Department of Physics & Astronomy of Western University.	

Mentorship

Hannah Christie | MSc Student, Western University

2023 - 2024

*Starting from an idea of mine, a summer research project was created based on it. I mentored Hannah Christie when she was working on the project, and it led to the successful publication of the article **“TONGS: A Treasury of Nearby Galaxy Surveys”** in 2024. More than **1500 downloads** as of August 2026!*

Teaching Experience

4 years of teaching experience with 1st year Physics labs and Physics tutorials, 2nd year Physics labs and Astronomy tutorials, 3rd year Astronomy lectures and tutorials.

When I taught Enriched Introductory Physics in Fall 2024, I helped develop a series of labs and tutorials based on Arduino with the course instructor, revamping the entire course from scratch.