Katerina Isabel Benevides

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EDUCATION

University of British Columbia, Department of Earth, Ocean, & Atmospheric Sciences — *Vancouver, BC*
MSc. Physical Oceanography — *Sept 2024 – June 2026*
- Observational analysis of Pan-Arctic stratification over the last few decades
- Judging Canada's role in the degradation of the Pan-Arctic permafrost

University of Toronto, Department of Arts & Science — *Toronto, ON*
HBSc. Specializing in Planetary Science. Minor in Archaeology. Minor in Geoscience — *Sept 2020 – June 2024*

EXPERIENCE

Project Supervisor, Visions of Science, Dunlap Institute for Astronomy and Astrophysics — *Toronto, ON*
Jun 2023 – Aug 2023
- Supervised two projects for four high school students partaking in Visions of Science
- Wrote **Python** to help the students characterize exoplanet habitability via physical properties and characterize galaxy types through the light they emit
- Helped students problem solve and debug their **Python** code

Campus Organizations Assistant, Student Life, University of Toronto — *Toronto, ON*
Sept 2022 – Aug 2023
- Fostered inclusive environments by hosting EDI meetings, ensuring students felt supported and comfortable in seeking assistance to effectively address their challenges

President of PhySU & ASX, University of Toronto — *Toronto, ON*
May 2022 – May 2023
- President for both the Physics Student Union and the Astronomy and Space Exploration Association, previously the VP Internal/External and Events Director respectively
- Held financial meetings with the Arts & Science Student Union, UTSU, and UofT staff
- Hosted the annual symposium and gave a platform for prominent physics and astronomy figures

Information Officer, Allan I. Carswell Observatory, York University — *Toronto, ON*
June 2020 – Mar 2022
- Organized monthly training sessions for volunteers and researchers, leveraging their expertise to conduct engaging educational public tours
- Designed weekly newsletters and managed social media announcements

RESEARCH

HII Region Identification for Stellar Clusters, Astronomy Department, University of Toronto — *Toronto, ON*
Sept 2023 – Apr 2024
- Supervised by Laurie Rousseau-Nepton, Professor in the Astronomy and Astrophysics Department at the University of Toronto
- Tailored target selection for studying star forming regions evolution, data analysis techniques, **emission line fitting** and **dust extinction correction** using **Hα/Hβ ratios**
- Innovated methods for assessing the life cycles of **HII regions**, **gas density**, **cluster mass determination**, exploring the spatial correlation, giving insight to the dynamics of star formation

Sub-surficial Geophysical Imaging of an Artesian Spring, University of Toronto — *Toronto, ON*
Sept 2023 – Apr 2024
- Used **geophysical imaging** techniques like **Resistivity Lines** and **Ground-Penetrating Radar** to analyze sub-surface dynamics of artesian springs found in Laurentian Hills, Ontario
- Wrote **MATLAB** and **Python** scripts to create cross-sections for analysis

Source Mechanism Analysis of Kahramanmaras Earthquake, University of Toronto — *Toronto, ON*
May 2023 – Nov 2023
- Supervised by the J. Tuzo Wilson award professor, Qinya Liu
- Applied the **MTUQ** package to examine the earthquake source mechanism and aftershock sequences, as well as its temporal and spatial relationship to the mainshock.
- Explored utilizing a **regional 3D background model** for the source mechanism of the earthquake and built models to examine the events leading up to and beyond the main earthquake.

Geophysical Field Techniques, ESS450, University of Toronto — *Deep River, ON*
Aug 2023 - Sept 2023
- Selected to travel to Deep River to perform analyses using various hands-on **geophysical instrumentation devices**
- Applied various data collection techniques and performed data analysis in **gravity**, **magnetic**, **seismic**, **electrical**, **electromagnetic**, and **radar surveys**

CONFERENCES & PANELS

Annual Canadian Space Conference, SEDS Canada — *Montreal, QC, Jan 2023*
- Chosen, along with the other executives of the Astronomy and Space Exploration Association, to take part in this conference
- Presented past symposium events and workshops to hundreds of people
- Participated in interactive discussion with James Webb Space Telescope engineers

Life (not) As We Know It, ASX, University of Toronto — *Toronto, ON, Feb 2023*
- Organized accommodations for speakers to present for the symposium event internationally
- Budgeted large sums of money to accommodate our needs, the needs of the speakers, and catering for **400 people**; totaling over **$10,000**

GAIA Data-Release 3 (DR3) Hike, Canadian Institute of Theoretical Astrophysics (CITA) — *Vancouver, BC, June 2022*
- Calculated and predicted the paths and trajectories that stars follow in the Milky Way using **Java**, **TOPCAT**, and the **Gala** Astropy package
- Applied physical models and computational methods to **simulate** how these stars move under the influence of gravitational forces
- Studied the dynamics and evolution of these stars in the broader context of galactic structure and formation

Stellar Spectacles 18th Annual Symposium, ASX, University of Toronto — *Toronto, ON, Feb 2022*
- Hosted an astrophotography workshop, teaching guests on how to use equipment to take deep-space images
- Introduced **DORADO** and **HoggCam** to interested parties

PROJECTS

DORADO, Allan I. Carswell Observatory — *Toronto, ON, Sept 2019 – Feb 2021*
- Co-founded the Digitizing Observatory Resources for Automated Data Responses, an open-source **Python** package made to replace IRAF in research **data processing/analysis** at the observatory, now accommodating public outreach efforts

HoggCam, Allan I. Carswell Observatory — *Toronto, ON, May 2019 – June 2020*
- Co-created a low-cost, versatile space camera using a **Raspberry Pi** HQ camera board
- Supports most thread-mount lenses and attaches to any telescope

SKILLS

Tools/Equipment	Python, Java, TopCat, 1m/60cm/40cm/16in/8in Telescopes, Spectrophotometers, CCD Cameras, Seismometers, Radar Surveys, ResiPY, GPRpy, MTUQ
Languages	English, French, Greek, Spanish, Portuguese