

EDUCATION

McGill University Master of Science with Specialization in Astrophysics – Supervisor: Dr. Victoria Kaspi Thesis Projects: 1. Sensitivity Threshold estimation for CHIME/FRB system 2. Code Development for CHIME/FRB Flux/Fluence Calibration Pipeline	Montreal, Canada
McMaster University Bachelor of Science with Honours in Astrophysics – Undergraduate Thesis: <i>CO Isotopologues in Galaxy Mergers</i> Supervisor: Dr. Christine Wilson – Independent Study: <i>Numerically Computing Fast Oscillating Integrals</i> Supervisor: Dr. Sergey Sibiryakov	Hamilton, Canada July 2023

PUBLICATIONS

1. The CHIME/FRB Collaboration (2024). *The Second CHIME/FRB Fast Radio Burst Catalog*. To be submitted to The Astrophysical Journal Supplement Series.

SCHOLARSHIPS AND AWARDS

• NSERC-CREATE New Technologies for Canadian Observatories Program (CAD 13500)	Sept 2023 - Dec 2023
• Institut Trottier de recherche sur les exoplanètes (iREx) Excellence Grant (CAD 9000)	May 2023 - Aug 2023
• Department of Physics and Astronomy Research Experience Award (CAD 7350)	May 2022 - Aug 2022
• MacPherson Institute Student Partner Program (CAD 1200)	Sept 2021 - Apr 2022
• The Gerald and Verna Simpson Memorial Scholarship (CAD 600)	Sept. 2021

CONFERENCES AND TALKS

Canadian Astronomical Society Annual Meeting (Poster Presentation) University of Toronto, Toronto, CA – Poster title: “The Second CHIME/FRB Fast Radio Burst Catalog”	June 2024
Hotwiring the Transient Universe VII (Flash Talk) University of Toronto, Toronto, CA – Presentation title: “Sensitivity Threshold estimation for CHIME/FRB system”	May 2024
Centre de Recherche en : Astrophysique du Québec (CRAQ) (Flash Talk) L’Auberge du Lac-à-l’Eau-Claire, CA – Presentation title: “Sensitivity Threshold estimation for CHIME/FRB system”	May 2024
Canadian Undergraduate Physics Conference (Oral Presentation) University of Guelph, Guelph, CA – Presentation title: “Phase Space Study of Star Formation in Cluster Galaxies”	Oct 2022

RESEARCH EXPERIENCE

Graduate Student, Trottier Space Institute

September 2023 - Present

Supervisor: Dr. Vicky Kaspi

- “Sensitivity Threshold estimates for CHIME/FRB system”
 1. Integrated new plotting features to visualize data products, and conducted thorough testing to verify the correctness and stability of the code, identifying and resolving any issues.
 2. Created comprehensive documentation to facilitate understanding and usage of the code for future developers and users.
 3. Ported the pipeline to be compatible with the workflow system, a bookkeeping framework to manage the life-cycle of any action performed by the CHIME/FRB Telescope.
 4. Enhanced the script to work with raw voltage data produced by CHIME in order to e
- “Code Development for CHIME/FRB Flux/Fluence Pipeline”
 1. Ported the pipeline to be compatible with the workflow system, using GitHub actions to refactor the scripts, fix bugs, and update dependencies.
 2. Set up collaboration-facing Docker environments to enable accessible CLI functionality for running the pipeline.

Summer Intern, Trottier Institute for Research on Exoplanets

May 2023 - Aug 2023

Supervisor: Dr. Jonathan Gagné

- “Planemos and Planet Formation”
 1. Cross-matched exoplanet data from NASA archives with the Montreal Open Clusters and Associations (MOCA) database to get reliable estimates of exoplanet age.
 2. Deployed advanced statistical libraries (KDEpy) and machine learning techniques (Normalized Flows) to constraint the properties of exoplanet populations.
 3. Developed a Monte-Carlo Markov Chain (MCMC) pipeline to calculate proper motions and parallax of stars using epochs combined from infrared surveys such as WISE (including unTimely) and Pan-STARRS.

Undergraduate Thesis, McMaster University

Sept 2022 - April 2023

Supervisor: Dr. Christine Wilson

- “CO Isotopologues in Merging Galaxies”
 1. Analyzed the line ratios of CO isotopologues in resolved Antennae galaxy images to calibrate scaling relations such as dust-to-gas ratio and optical depth and understand variations under spatial resolutions.

Independent Study Project, McMaster University

Sept 2022 - Dec 2022

Supervisor: Dr. Sergey Sibiryakov

- “Numerically Computing Fast Oscillating Integrals”
 1. Implemented the theory of asymptotic series to solve fast oscillating integrals which have wide applications in radio astronomy, optical physics, and gravitational lensing models.
 2. Optimized the contour flow algorithm in the Picard-Lefschetz integral solver developed by Job Feldbrugge, Ue-Li Pen and Neil Turok.

Research Assistant, McMaster University

May 2022 - Aug 2022

Supervisor: Dr. Laura Parker

- “Phase Space Study of Star Formation in Cluster Galaxies”
 1. Used a sample of galaxies from the Sloan Digital Sky Survey to constraint the effect of host-environments on their star formation activity in the low-redshift universe by using various star-formation indicators and phase space analysis.

Research Assistant, McMaster University

Sept 2021 - Apr 2022

Supervisor: Dr. Rob Cockcroft

- “Developing a Two-Eyed Seeing Astronomy Course”
 1. Assisted in the development of Astron 2A03 course offered at McMaster University.
 2. Evaluated feedback from a previous iteration of course and re-designed course elements including in-class participation, field activities and assessments.
 3. Designed assessments to integrate W.J. McCallion Planetarium in course delivery to offer a hands-on astronomy education to students with no background in science.

SKILLS

- **Programming Languages:** C++, Python, LaTeX, MATLAB, SQL, ADQL
- **Softwares and Tools:** Common Astronomy Software Applications (CASA), Cube Analysis and Rendering Tool for Astronomy (CARTA), TopCat, Sequel Ace, Linux, Docker, Git
- **Languages:** Hindi, English
- **Miscellaneous:** Zoom, Excel, Slack, Microsoft Teams

TEACHING AND MENTORSHIP

Teaching Assistant at Department of Physics

McGill University, Montreal, CA

- Introductory Physics: Electricity and Magnetism (PHYSICS 142; Head TA) Winter 2024
- Introductory Physics: Mechanics (PHYSICS 101; Head TA) Fall 2023

Teaching Assistant at Department of Physics and Astronomy

McMaster University, Hamilton, CA

- Scientific Computing (PHYSICS 2G03) Fall 2022
- Introduction to Modern Physics (PHYSICS 1AA3) Summer 2022
- The Big Questions (ASTRON 2B03) Spring 2022
- Waves, Electricity and Magnetic Fields (PHYSICS 1E03) Winter 2022
- Introductory Mechanics (PHYSICS 1D03) Fall 2021

Upper Year Mentor at International Student Services

Sept 2022 - Apr 2023

McMaster University, Hamilton, CA

- Mentored one first-year international students to navigate life in university and Canada

OUTREACH AND SERVICE

VP Professional Development at Graduate Association of Physics Students

Sept 2023 - Current

McGill University, Montreal, CA

VP Academic at McMaster Undergraduate Physics Society

Sept 2022 - Apr 2023

McMaster University, Hamilton, CA

- Organized 1 academic event every month, such as physics help sessions, graduate panels, and career workshops for undergraduate students in the physics department

Symbiosis Night at McMaster University

Oct 2022

Organized by McMaster Science Society and Science Career and Cooperative Education Office

- Panellist for undergraduate students in science interested in research, including both summer and thesis projects, to communicate different resources and personal experiences

Adventures in Physics and Astronomy at Department of Physics and Astronomy

Sept 2022

McMaster University, Hamilton, CA

- Panellist for visiting grade 4-8 students from IL Thomas School, Six Nations, to answer questions about life at university and possible career paths.

Volunteer at Canadian Association of Physicists Congress

June 2022

McMaster University, Hamilton, CA

- Assisted with organizing the conference by helping set up registration logistics for 500 attendees, offering support for 4 scientific sessions, and planning signage across campus.

Peer Leader (Experiential) at Student Success Centre

Sept 2021 - Apr 2022

McMaster University, Hamilton, CA

- Created material for workshops, outreach and campus events such as newsletters, presentations, etc.
- Communicated work experience opportunities to about 50 international students through 2 webinars.

ADDITIONAL EXPERIENCE

Community Advisor at Housing and Conference Services
McMaster University, Hamilton, CA

Sept 2021 - Apr 2023

- Managed a floor of 100+ students in McMaster residence working closely with 2 other community advisors (CA), within a larger team consisting of 25 CAs spanning 2 residence buildings and 1000+ students
- Organized monthly events with specific learning goals, connected with students on individual basis, and promoted a respectful and inclusive learning/ living environment.
- Implemented a strategic approach to solving problems in the residence, using appropriate and intentional actions to handle stressful situations involving (and including) roommate conflicts, intoxication, sexual identities, and fire response.

PROFESSIONAL TRAINING

Dunlap Institute Summer School: Introduction to Astronomical Instrumentation
By University of Toronto and Dunlap Institute for Astronomy and Astrophysics

2023

ALMA Cycle 10 Proposal Workshop

By National Radio Astronomy Observatory (NRAO) and ALMA Ambassadors Program

2023

More Feet on the Ground for Suicide Prevention

By Council of Ontario Universities, Brock University, and the Centre for Innovation in Campus Mental Health

2022

Responding to Disclosures of Sexual Violence

By McMaster's Sexual Violence Prevention and Response Office

2022

Violence and Harassment in the Workplace

By McMaster University

2022

Environmental and Occupational Health Support Services (EOHSS)

By McMaster University

2022

- Accessibility for Ontarians with Disabilities Act (AODA)
- Health and Safety Orientation
- Fire Safety
- Ergonomics
- Primer on Privacy
- Slips, Trips and Falls