

BREANNA CROMPVOETS

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📍 Victoria, BC, Canada

🌐 breanna-crompvoets

EDUCATION

University of Victoria • M.Sc. Astronomy

📅 2024-Present

📍 Victoria, BC

- Supervisor: Dr. James Di Francesco
- Dissertation Subject: Relationship Between YSOs and Dense Environments

University of Victoria • M.Sc. Astronomy

📅 2021-2023

📍 Victoria, BC

- Supervisor: Dr. James Di Francesco
- Cumulative GPA: 8/9
- Thesis Title: Application of Machine Learning Techniques To Young Stellar Object Classification

University of Regina • B.Sc. Honours Physics

📅 2017-2021

📍 Regina, SK

- Graduating GPA: 91.47%
- Thesis Title: Resonance Structures Within the Distant Kuiper Belt

AWARDS

2024-2027

NSERC P-GSD • \$63 000

President's Research Scholarship • \$5000

2022-2023

Dr. Peter Montgomery Graduate Scholarship • \$2608

2021-2022

BC Graduate Scholarship • \$15 000

The Reverend Gerald F. Lahey, S.J. Prize • \$500

+ 1 more

2020-2021

NSERC Undergraduate Student Research Award • \$8000

Petar C. Hein Memorial Scholarship in Physics • \$4000

+ 2 more

2019-2020

UofR Undergraduate Research Award • \$8200

Edmond Campion Anniversary Award • \$1000

Huber Undergraduate Physics Scholarship • \$900

+ 1 more

2018-2019

City of Regina Henry Baker Scholarship • \$2000

Dr. Neil Knecht Scholarship in Physics • \$1450

+ 6 more

RESEARCH AND TEACHING EXPERIENCE

Masters Research • University of Victoria

📅 2024-Present

📍 Victoria, BC

Investigating young stellar object production in dense environments.

Teaching Assistantships - Labs • University of Victoria

📅 2021-Present

📍 Victoria, BC

Taught labs in Phys 102A (Fall 2021), Astro 101 (Fall 2022, Spring 2023).

Masters Research • University of Victoria

📅 2021-2023

📍 Victoria, BC

Machine learning classification of young stellar objects from astronomical surveys.

Teaching Assistantships - Marking • University of Regina

📅 Spring 2020 - Spring 2021

📍 Regina, SK

Marked introductory physics assignments (Phys 111/112 at UofR) for three semesters and made recommendations that were used to improve the class.

Honours Project - OSSOS • University of Regina

📅 2020-2021

📍 Regina, SK

Analysis and simulation of orbital parameters for objects within distant resonances in the Transneptunian Belt.

Origin of Life • McMaster University

📅 Summer 2020

📍 Regina, SK

Analysis of RNA polymerization obtained from the Planet Simulator at McMaster's Origin of Life Laboratory.

GlueX • University of Regina and Jefferson Lab

📅 Summer 2019

📍 Regina, SK; Newport News, VA

Noise and resolution measurements of photomultiplier tubes and experimental determination of saturation in silicon photomultipliers.

PUBLICATIONS AND CONFERENCE PRESENTATIONS

Cromptvoets, B. L., Teimoorinia, H., Di Francesco, J. (2024) Climbing the Cliffs: Classifying YSOs in the Cosmic Cliffs JWST Data using a Probabilistic Random Forest. Submitted.

Cromptvoets, B. L., Teimoorinia, H., Di Francesco, J. (2023) Young Stellar Objects in NGC 3324 Found with James Webb. Protostars and Planets VII. Poster.

Cromptvoets, B. L., Lawler, S. M., Volk, K., Chen, Y. -T., Gladman, B., Peltier, L., Alexandersen, M., Bannister, M. T., Gwyn, S., Kavelaars, J. J., Petit, J. -M. (2022) OSSOS XXV: Large Populations and Scattering-Sticking in the Distant Trans-Neptunian Resonances. Planetary Science Journal. 3: 113-127.

Lawler, S., Pike, R., Alexandersen, M., **Cromptvoets, B.**, Peltier, L., and Volk, K. (2022) The Populations of Plutinos and Other Resonant TNOs in the Distant Solar System. AAS/Division of Dynamical Astronomy Meeting. 54: 202.04.

Cromptvoets, B. L., Teimoorinia, H., Di Francesco, J. (2022) Machine Learning Methods Applied to Star Formation Classification. CASCA AGM. Poster and Flash Talk.

Cromptvoets, B. L., Lawler, S. (2021) Large Populations in the Distant Trans-Neptunian Resonances. CASCA AGM. Poster.

Cromptvoets, B. L. (2020) Experimental Determination of Saturation in SiPMs. Canadian Conference for Undergraduate Women in Physics. Presentation.

Cromptvoets, B. L. & Ross, D. (2019) Experimental Determination of Saturation in the BCAL SiPMs. Internal Report, GlueX-doc-4135.

OUTREACH AND MENTORING

"Deep Sky" Annual Passholder Event • Royal BC Museum

📅 Jan 24 2024

📍 Victoria, BC

Joined a panel to discuss James Webb Space Telescope research and capabilities with the public after the showing of the associated documentary.

Ask an Astronomer! YouTube Show • H.R. MacMillan Space Centre

📅 Dec 14 2023

Presented a talk, available on YouTube on "AI in Space". The talk was centred on demystifying AI and talking about how I use machine learning techniques for my research.

Let's Innovate! Podcast • Science Fair Foundation

📅 Nov 2023

Spoke as an invited guest on a podcast concerning how science fairs and youth innovation fairs are judged.

Speakers Bureau • University of Victoria

📅 Sept 2022-May 2023

📍 Victoria, BC

Spoke to Grade 3, 4, and 5 students on the life cycle of stars and the change to Pluto's planetary classification at the following schools:

- John Stubbs Memorial School (Age 10, Class size: 28, Date: Oct 18, 2022)

- Doncaster Elementary School (Age 9, Class size: 26, Dates: Feb 7, 2023, Feb 28, 2023)
- Selkirk Montessori School (Age 9, Class size: 2x30, Date: Apr 4, 2023)
- Frank Hobbs School (Age 10-11, Class size: 23, Date: May 17, 2023)

The Speaker's Bureau program has since been retired.

Science Fairs and Summer Schools

- **Youth Innovation Showcase**

📅 Nov 2022, 2023

📍 BC

I judged a subset of the projects given by students across the province, as well as I judged semi-finals and finals for the high school categories.

- **Vancouver Island Regional Science Fair**

📅 Apr 10 2022

📍 Vancouver Island, BC

I acted as a judge of a subset of projects given by students across the island.

- **Engaging Youth in Engineering and Science (EYES)**

📅 May 2021

📍 Regina, SK

I "made" comets with a group of 12-13 year olds as part of a summer science camp.

Mentoring and Panels

- **Peers Mentoring Peers: Women in Science**

📅 Sept 2022-Present

📍 Victoria, BC

I have acted as mentor to three female undergraduate Physics students at different stages in their academic journey.

- **Graduate Mentor**

📅 Sept 2022-Present

📍 Victoria, BC

I have acted as mentor to three graduate students entering Physics and Astronomy graduate studies.

I also sat on a panel for introducing new graduate students to life at the university and what it meant to be a graduate student.
