

Ian CHOW
MSc. Astronomy Candidate | University of Western Ontario

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RESEARCH INTERESTS

Small Solar System Bodies, Machine Learning, Astrostatistics, Planetary Dynamics, Bayesian Inference

EDUCATION

PRESENT Sep. 2023	University of Western Ontario MSc. ASTRONOMY Cumulative GPA of 4.00/4.00 Thesis : Orbital and Physical Properties of Decameter-Sized Earth Impactors SUPERVISOR : Prof. Peter G. Brown	London, ON, Canada
May 2023 Sep. 2018	University of Toronto HONOURS BSc. ASTRONOMY & PHYSICS SPECIALIST, STATISTICS MAJOR, MATHEMATICS MINOR Graduated with High Distinction – Cumulative GPA of 3.60/4.00 Astronomy Thesis : Analyzing Radial Velocity Data from the Resonant Planetary System HD 45364 SUPERVISORS : Dr. Sam Hadden, Prof. Hanno Rein Statistics Thesis : Probabilistic Dimensionality Reduction Methods for Stellar Chemodynamics SUPERVISOR : Prof. Joshua S. Speagle	Toronto, ON, Canada

ADDITIONAL RESEARCH POSITIONS

Aug. 2023 May 2023	Dunlap Institute for Astronomy & Astrophysics, University of Toronto SUMMER UNDERGRADUATE RESEARCH ASSISTANT Project : Understanding the impact of Bayesian inference on ultra-light axion limits SUPERVISOR : Dr. Keir K. Rogers	Toronto, ON, Canada
Aug. 2022 May 2022	Canadian Institute for Theoretical Astrophysics (CITA) SUMMER UNDERGRADUATE RESEARCH FELLOW Project : Modelling Migration Scenarios of Resonant Planets Using Radial Velocity Data SUPERVISORS : Dr. Sam Hadden, Prof. Hanno Rein	Toronto, ON, Canada

RELEVANT COURSEWORK

Astrophysics	Astrophysics (stellar structure/evolution, nucleosynthesis, galaxies, cosmology), Small-Body and Planetary Formation & Dynamics, Classical Mechanics I & II, Thermal Physics, Quantum Mechanics, Classical & Relativistic Electrodynamics, Nonlinear Physics and Chaos, Time-Series Analysis
Statistics	Probability & Statistics, Data Analysis, Surveys, Sampling and Observational Data, Statistical Computation, Machine Learning, Statistical Inference

PEER-REVIEWED PUBLICATIONS

FIRST AUTHOR

1. **Chow, I.**, and Brown, P.G. “Decameter-sized Earth impactors – I: Orbital properties.” 2025, Icarus, 429, 116444.
2. **Chow, I.**, and Hadden, S. “Influence of Modeling Assumptions on the Inferred Dynamical State of Resonant Systems : A Case Study of the HD 45364 System.” 2025, ApJ, 980(2), 236.

AWARDS, SCHOLARSHIPS, FELLOWSHIPS & HONOURS

2024	NASA International Space Apps Challenge Global Winner , honour	NASA
2024-2025	Ontario Graduate Scholarship , \$15,000 CAD	University of Western Ontario
2023-2025	Western Graduate Research Scholarship , \$9,932 CAD	University of Western Ontario
2023	SURP Poster Competition Award , \$50 CAD	University of Toronto
2023	Summer Undergraduate Research Program (SURP) Fellowship , \$9,980 CAD	University of Toronto
2022	Summer Undergraduate Research Fellowship (SURF) , \$9,500 CAD	CITA

TEACHING EXPERIENCE

My duties in the following course included delivering lectures and conducting in-class demonstrations, holding office hours, procuring, grading and reviewing exams.

2024-2025 **Astronomy 1021 : General Astronomy**, Teaching Assistant & Guest Lecturer (x2) *University of Western Ontario*

My duties in the following course included supervising lab sessions and grading lab reports.

2023-2024 **First-Year Physics Labs**, Teaching Assistant (x2) *University of Western Ontario*

My duties in the following courses included leading in-person tutorials and help centres, running midterm viewing sessions, procuring, grading and reviewing exams.

2024 **Physics 1402 : Physics for Engineering Students II**, Teaching Assistant *University of Western Ontario*

2023 **Physics 1201 : Physics for the Sciences I**, Teaching Assistant *University of Western Ontario*

RELEVANT PROFESSIONAL EXPERIENCE

Sep. 2020 | **Innovere Medical** *Markham, ON, Canada*
Jun. 2020 | SOFTWARE DEVELOPER

- Automated detection of dropouts in time-series audio data from an MRI scanner's wireless audio system using power spectrum analysis in MATLAB and Python, eliminating 20+ hours of work weekly
- Developed and tested TechSmart, an in-house multimedia app for patient use during MRI scans, with company's software development team

MATLAB Python Signal Processing

Aug. 2019 | **Plantiga Technologies** *Vancouver, BC, Canada*
Jun. 2019 | SOFTWARE DEVELOPER

- Developed methods to compute physical fitness heuristics from time-series acceleration (g-force) data, using signal processing techniques like digital filtering and convolution in Python (NumPy, SciPy, Pandas) to improve detection of foot impacts
- Field-tested and validated hardware such as sensor shoe insoles that track movement
- Acquired data from company partners such as physiotherapy clinics, universities (University of British Columbia, Simon Fraser University), and sports organizations (Houston Rockets, US Tennis Association)
- Wrote documentation of company products and services for clients

Python Signal Processing Data Analysis

Aug. 2017 | **Synced Review** *Toronto, ON, Canada*
Jun. 2017 | RESEARCH INTERN

- Conducted literature review focusing on advancements in reinforcement learning used in adversarial-search board and video game artificial intelligence programs for a company report
- Worked with company team to research and edit review articles on industry trends in machine learning and robotics technology

Machine Learning Artificial Intelligence Literature Review

CONFERENCE PRESENTATIONS

CONTRIBUTED TALKS

May 2024 **AAS Division on Dynamical Astronomy 55**, University of Toronto *Toronto, ON, Canada*

Aug. 2022 **2022 CITA Planet Day**, Canadian Institute for Theoretical Astrophysics *Toronto, ON, Canada*

POSTER PRESENTATIONS

Jun. 2024 **2024 Canadian Astronomical Society AGM**, University of Toronto/York University *Toronto, ON, Canada*

Jun. 2023 **2023 Canadian Astronomical Society AGM**, University of British Columbia *Penticton, BC, Canada*

OTHER ACADEMIC PRESENTATIONS

May 2024	NASA Day , NASA Meteoroid Environment Office. Student talk.	<i>Virtual</i>
Aug. 2023	SURP Symposium , University of Toronto. Poster.	<i>Toronto, ON, Canada</i>
Aug. 2022	SURF Presentation , Canadian Institute for Theoretical Astrophysics. Student talk.	<i>Toronto, ON, Canada</i>

LEADERSHIP, VOLUNTEERING & EXTRACURRICULAR EXPERIENCE

Aug. 2024 Jun. 2024	Hume Cronyn Memorial Observatory OUTREACH VOLUNTEER <ul style="list-style-type: none">Volunteered at summer astronomy Public Nights attended by 80+ visitors weekly at the University of Western Ontario's Cronyn Observatory	<i>London, ON, Canada</i>
Jun. 2024 Sep. 2023	Consensus Trivia QUESTION WRITER/EDITOR <ul style="list-style-type: none">Wrote and edited trivia questions for Consensus Trivia, a federally registered not-for-profit organization that runs team-based trivia tournaments for 80+ high school and collegiate teams across CanadaModerated and kept score for tournament games as a staffer	
May 2023 Jan. 2019	University of Toronto Academic Trivia Club VICE PRESIDENT, COMPETITOR, TOURNAMENT ORGANIZER & QUESTION WRITER/EDITOR <ul style="list-style-type: none">Elected Vice President of the University of Toronto's Academic Trivia Club during the 2020-2021 and 2021-2022 academic years organizing twice-weekly practices and social events, managing club Facebook group and Discord server with 300+ members, and moderating practices and tournament gamesRepresented the University of Toronto at 30+ trivia (quiz bowl) tournaments across Canada and the U.S. as a competitor with several top finishes at North American championships, such as leading the team to fourth place at the 2022 Division II Intercollegiate Championship Tournament in ChicagoOrganized and directed several collegiate and high school tournaments, including the 2021 University of Toronto Collegiate Novice and the 2022 University of Ottawa ACF Fall tournaments, played by 30+ collegiate teams in total across Canada and the U.S.Wrote and edited trivia questions across a wide range of academic disciplines (including astronomy and physics) for 2022 WORKSHOP, 2023 Canadian Novice, and 2024 MRNA III, collegiate tournaments played by 80+ teams in total across Canada, the U.S., and the U.K.	<i>Toronto, ON, Canada</i>

MEDIA COVERAGE

Jan. 2025	Team of Western students wins NASA Space Apps Challenge	<i>University of Western Ontario</i>
Oct. 2023	SURP Student Spotlight Interview	<i>University of Toronto</i>

PROJECTS

SKYSHIELD ORRERY

2024

 ia-chow.github.io/projects/skyshield-orrery

An interactive, physics-based digital Solar System orrery highlighting near-Earth objects and meteoroids. Developed by Dakota Cecil, Ian Chow, Simon Van Schuylenbergh and Maximilian Vovk for the 2024 [NASA International Space Apps Challenge](#) and selected by NASA as [one of 10 Global Winners](#) out of 10,000 submitted projects. Hosted on a personal website.

[HTML](#) [CSS](#) [JavaScript](#)

FASANO-FRANCESCHINI-TEST

2024

 github.com/wmpg/fasano-franceschini-test

A Python implementation for the multivariate extension of the two-sample Kolmogorov-Smirnov (K-S) statistical test described by [Fasano & Franceschini \(1987\)](#). Published as part of [Chow & Brown \(2025\)](#).

[Python](#)

HERE I STAND CALCULATOR

2020

 ia-chow.github.io/projects/his/

An online calculator tool to compute the odds of various outcomes for the strategy board game [Here I Stand](#), written to familiarize myself with HTML, CSS and JavaScript. Hosted on a personal website.

[HTML](#) [CSS](#) [JavaScript](#)

SKILLS

Programming Python (NumPy, SciPy, Pandas, Matplotlib, Keras/TensorFlow, scikit-learn), MATLAB, R (ggplot, dplyr), HTML5 (Bootstrap), CSS, JavaScript (Node.js)

Software \LaTeX , Git/GitHub, Jupyter Notebook, Anaconda, R Suite, Bash, Linux (ssh), Microsoft Excel

Languages English (fluent), French (intermediate), Cantonese (spoken)

OTHER AFFILIATIONS

2024- **Institute for Earth and Space Exploration**

University of Western Ontario