

# Ian CHOW

## MSc. Astronomy Candidate | University of Western Ontario

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### 🔍 RESEARCH INTERESTS

Astrostatistics, Machine Learning, Exoplanets, Dynamics

### 🎓 EDUCATION

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

### ADDITIONAL RESEARCH POSITIONS

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

### 📖 PEER-REVIEWED PUBLICATIONS

#### FIRST AUTHOR

1. **Chow, I.**, & Brown, P.G. “Decameter-Sized Earth Impactors – I : Orbital Properties”, in review at Icarus.
2. **Chow, I.**, & Hadden, S. “Influence of Modeling Assumptions on the Inferred Dynamical State of Resonant Systems : A Case Study of the HD 45364 System”, in review at ApJ.

### 🏆 AWARDS, SCHOLARSHIPS, FELLOWSHIPS & HONOURS

2024	<b>NASA Space Apps Challenge Global Finalist</b> , honour	NASA
2024-2025	<b>Ontario Graduate Scholarship</b> , \$15,000 CAD	University of Western Ontario
2023-2024	<b>Western Graduate Research Scholarship</b> , \$8,257 CAD	University of Western Ontario
2023	<b>SURP Poster Competition Award</b> , \$50 CAD	University of Toronto
2023	<b>Summer Undergraduate Research Program (SURP) Fellowship</b> , \$9,980 CAD	University of Toronto
2022	<b>Summer Undergraduate Research Fellowship (SURF)</b> , \$9,500 CAD	CITA
2021-2022	<b>Smith Solis Research Scholarship in Astronomy and Astrophysics</b> , \$1,250 CAD	University of Toronto
2020-2023	<b>Dean's List Scholar</b> , honour	University of Toronto

### ✍ TEACHING EXPERIENCE

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

2024 **Astronomy 1021 : General Astronomy**, Teaching Assistant & Guest Lecturer

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, proctoring, 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 Jun. 2020	<b>Innovere Medical</b> SOFTWARE DEVELOPER	Markham, ON, Canada
	<ul style="list-style-type: none"><li>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</li><li>Developed and tested TechSmart, an in-house multimedia app for patient use during MRI scans, with company's software development team</li></ul>	
	MATLAB Python Signal Processing	
Aug. 2019 Jun. 2019	<b>Plantiga Technologies</b> SOFTWARE DEVELOPER	Vancouver, BC, Canada
	<ul style="list-style-type: none"><li>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</li><li>Field-tested and validated hardware such as sensor shoe insoles that track movement</li><li>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)</li><li>Wrote documentation of company products and services for clients</li></ul>	
	Python Signal Processing Data Analytics	
Aug. 2017 Jun. 2017	<b>Synced Review</b> RESEARCH INTERN	Toronto, ON, Canada
	<ul style="list-style-type: none"><li>Conducted literature review focusing on advancements in reinforcement learning used in adversarial-search board and video game artificial intelligence programs for a company report</li><li>Worked with company team to research and edit review articles on industry trends in machine learning and robotics technology</li></ul>	
	Machine Learning Artificial Intelligence Literature Review	



## CONFERENCE PRESENTATIONS

2024 CASCA AGM	"Properties of Decameter Earth Impactors." Poster.	Toronto, ON, Canada
2024 DDA 55 Meeting	"The Dynamical Origin of Decameter Earth Impactors." Contributed talk.	Toronto, ON, Canada
2023 CASCA AGM	"Identifying birth environments of isolated stars : a probabilistic dimensionality reduction model for stellar chemical abundances." Poster.	Penticton, BC, Canada
2022 CITA Planet Day	"Modelling Migration Scenarios of Resonant Planets Using Radial Velocity Data." Contributed talk.	Toronto, ON, Canada



## DEPARTMENTAL PRESENTATIONS, SEMINARS & ACADEMIC TALKS

2024 NASA Day	"The Dynamical Origin of Decameter Earth Impactors." Invited talk (Virtual).	NASA Meteoroid Environment Office
2023 SURP Symposium	"Understanding the impact of Bayesian inference on ultra-light axion limits." Poster.	University of Toronto
2022 SURF Presentation	"Modelling Migration Scenarios of Resonant Planets Using Radial Velocity Data." Invited talk.	University of Toronto



## LEADERSHIP, VOLUNTEERING & EXTRACURRICULAR EXPERIENCE

PRESENT Jun. 2024	<b>Hume Cronyn Memorial Observatory</b> VOLUNTEER <ul style="list-style-type: none"><li>Volunteered at astronomy Public Nights attended by 80+ visitors weekly at the University of Western Ontario's Cronyn Observatory</li></ul>	<i>London, ON, Canada</i>
Jun. 2024 Sep. 2023	<b>Consensus Trivia</b> QUESTION WRITER/EDITOR <ul style="list-style-type: none"><li>Wrote and edited trivia questions for <a href="#">Consensus Trivia</a>, a federally registered not-for-profit organization that runs team-based trivia tournaments for 80+ high school and collegiate teams across Canada</li><li>Moderated and kept score for tournament games as a staffer</li></ul>	
May 2023 Jan. 2019	<b>University of Toronto Academic Trivia Club</b> VICE PRESIDENT, COMPETITOR, TOURNAMENT ORGANIZER & QUESTION WRITER/EDITOR <ul style="list-style-type: none"><li>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 games</li><li>Represented 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 Chicago</li><li>Organized 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.</li><li>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.</li></ul>	<i>Toronto, ON, Canada</i>



## MEDIA EXPERIENCE

Oct. 2023	<b>SURP Student Spotlight</b> Interview	<i>Dunlap Institute for Astronomy &amp; Astrophysics, University of Toronto</i>
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## PROJECTS

<b>SKYSHIELD ORRERY</b> <a href="#">ia-chow.github.io/projects/skyshield-orrery</a> An in-browser physics-based virtual interactive Solar System orrery developed for the 2024 <a href="#">NASA Space Apps Challenge</a> and selected by NASA as <a href="#">one of 40 Global Finalists</a> out of 10 000 submitted projects. Later adapted for use as a teaching aid for the undergraduate course Astronomy 1021 at the University of Western Ontario. Hosted on a personal website. HTML CSS JavaScript	2024
<b>FASANO-FRANCESCHINI-TEST</b> <a href="#">github.com/wmpg/fasano-franceschini-test</a> A Python implementation for the multivariate extension of the two-sample Kolmogorov-Smirnov (K-S) test proposed by <a href="#">Fasano &amp; Franceschini (1987)</a> . Used in <a href="#">Chow &amp; Brown (2025)</a> . Python	2024
<b>HERE I STAND CALCULATOR</b> <a href="#">ia-chow.github.io/projects/his/</a> An online calculator tool to compute the odds of various outcomes for the strategy board game <a href="#">Here I Stand</a> , written to familiarize myself with HTML, CSS and JavaScript. Hosted on a personal website. HTML CSS JavaScript	2020



## SKILLS

<b>Programming</b>	Python (NumPy, SciPy, Pandas, Matplotlib, Keras/TensorFlow, scikit-learn), MATLAB, R (ggplot, dplyr), HTML5 (Bootstrap), CSS, JavaScript (Node.js)
<b>Software</b>	TeX, Git/GitHub, Jupyter Notebook, Anaconda, R Suite, Bash, Linux (ssh), Microsoft Excel
<b>Languages</b>	English (fluent), French (intermediate), Cantonese (spoken)



## OTHER AFFILIATIONS

2024-	<b>Institute for Earth and Space Exploration</b>	<i>University of Western Ontario</i>
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