
CHRIS MANN

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EDUCATION

- 2018—2023 **Ph.D.**, Physics (focus: Observational Astronomy – exoplanets)
Université de Montréal (UdeM)
- 2016—2018 **Master of Science**, Astronomy
University of British Columbia (UBC)
- 2013—2016 **Bachelor of Science with Distinction**, Astronomy
University of British Columbia
- 2008—2013 **Bachelor of Arts**, Psychology
University of British Columbia

RESEARCH EXPERIENCE

- 2023—present **Research Officer (postdoc)**
Herzberg Astronomy and Astrophysics Research Centre (NRC)
Advisor: Dr. Christian Marois
Project: Assessing and developing the image processing routines for the SPIDERS pathfinder instrument. Implementing the Coherent Differential Imaging (CDI) technique to improve imaging contrast and applying pixel-level calibrations. Developing a final processing pipeline that will run at unprecedented cadence for this type of high-contrast imaging.
- 2018—2023 **Ph.D. Dissertation**
Université de Montréal
Advisor: Dr. David Lafrenière
Project: Developing an observing mode and reduction/analysis pipeline for the Dragonfly Telephoto Array to enable its use as an exoplanet transit detector. Successful proposals/campaigns for photometric follow-up of TESS planetary candidates using Dragonfly, NEOSat, Gemini, and OMM. Leading of planetary validation and confirmation publications.
- 2016—2018 **Master's Thesis (ASTR 549)**
University of British Columbia
Advisor: Dr. Harvey Richer
Project: A more encompassing and thorough treatment of the 47-Tucanae intermediate mass black hole question investigated during my undergraduate thesis (see below).
- 2015—2016 **Undergraduate Thesis (ASTR 449)**
University of British Columbia
Advisor: Dr. Harvey Richer
Project: Proper motion velocity dispersion analysis to determine/constrain the presence of an intermediate-mass black hole in the centre of the globular cluster 47-Tucanae.

2015 **Research Assistant**
University of British Columbia
Advisor: Dr. Harvey Richer
Project: Photometric reduction of Hubble Space Telescope images to identify white dwarf stars that show signs of infrared-excess, indicating the potential presence of a dusty proto-planetary disk. Resulted in successful observing proposals with Gemini South.

2014 **Research Assistant**
University of British Columbia
Advisor: Dr. Aaron Boley
Project: Carried out a suite of hydrodynamics simulations to investigate the plausibility of early solar system planetoid bow shocks being an effective site for chondrule thermal processing.

TECHNICAL SKILLS

Python, photometric reduction/processing (photutils, AstroDrizzle, DAOPHOT, ds9, custom pipelines), data analysis, model fitting (emcee, nested sampling, batman, Juliet, AllesFitter, radvel), developing and conducting observing proposals

MEDIA AND PUBLIC OUTREACH

*2024 (May) Upcoming talk on exotic astronomical objects for a Naturalists' Club.
Level: General public

2023 (Jun) CBC interview to contextualize a publication generating media buzz. ([link](#))
Level: General public

2023 (Apr+May) St. Albert Gazette newspaper: kids science column. ([link](#), [link](#))
Level: Elementary School

2022 (May) iREx summer intern welcome lecture (Exoplanets 101).
Level: Undergraduate

2022 (Feb) CanYes virtual classroom visit.
Level: Grade 8

2021 (Jan) Presentation on basics of exoplanet research for a local Naturalists' Club.
Level: General public

2020 (Nov) RASC introductory presentation on exoplanets.
Level: Undergraduate

2020 (Jan) Helped facilitate "Intro to Physics Research" workshop for UdeM students.
Level: Undergraduate

2019 (Oct) Skype a Scientist virtual classroom visit through RASC.
Level: Highschool

2019 (May) Astronomer in Classroom program for local elementary schools.
Level: Grades 3-5

2018 (Dec) Presented on space science for elementary school classroom.
Level: Grade 2

RESEARCH AND TEACHING INTERESTS

- Exoplanet observation and characterization
- Observational astronomy in general (optical and infrared)
- Instrumentation development and support
- Photometric reduction and analysis
- Stellar and planetary dynamics
- I very much enjoy the teaching aspect of academia in addition to conducting research. I look forward to increasing my experience in an instructional role.
 - *Special note:* My time spent in at the Université de Montréal taught me a great deal, however my lack of French fluency prevented me from engaging in the most interactive teaching duties.

FORMAL INSTRUCTION EXPERIENCE

TA Institute – UBC Centre for Teaching, Learning, and Technology

Jan 2018 3-day teaching and facilitation workshop
 Specific sessions on handling large classes, small-group work, developing a teaching philosophy and portfolio, assessment techniques, and growth mindset teaching.

Teaching Assistant – University of British Columbia

Winter 2018 ASTR 205: Stars and Stellar populations
 Developing homework assignments, facilitating tutorial/discuss sessions, holding office hours, marking (~30 students).

Fall 2017 ASTR 101: Introduction to the solar system (science majors)
 Facilitated a pilot program focused on inquiry-based learning techniques. Guest-lectured, led weekly laboratories (~20 students) as well as conducted office hours and marking duties for half the class (~50 students).

Summer 2017 ASTR 311: Stars and Galaxies (non-science majors)
 Online course. Duties involved expanding course material and resources, marking, office-hours and virtual interaction with students via discussion forums. (~60 students)

Winter 2017 ASTR 311: Stars and Galaxies (non-science majors)
 Duties involved running weekly tutorials, marking, holding office hours, and monitoring a discussion forum. (~70 students)

Fall 2016 ASTR 310: Introduction to the solar system (non-science majors)
 Duties involved teaching weekly labs, marking, and holding office hours. (~100 students)

OTHER RELEVANT EXPERIENCE

- Feb-July 2022 **Scientific writer for website content**
Institute for Research on Exoplanets (iREx)
Produced majority of the exoplanet science content on iREx's new website. Discussed current research at a level appropriate for the general public.
- Summer 2012 **Outreach/Tours/Outreach Assistant**
TRIUMF: Canada's particle accelerator centre
Conducted science and facility tours for groups and drop-in visitors. Developed and carried out physics-related EPO events for the surrounding community.
- Summer 2011 **Science Facilitator**
Science World
Perform science shows and demonstrations in the exhibit halls to engage and educate guests on a wide range of subjects. Ran educational summer day-camps with >15 children.

PUBLICATIONS (* indicates co-authorship)

Published in refereed journal

- * [A hot mini-Neptune and a temperate, highly eccentric sub-Saturn around the bright K-dwarf TOI-2134](#)

Federica Rescigno, G. Hébrard, A. Vanderburg (+64 more)
Monthly Notices of the Royal Astronomical Society, 527, 3, 2024

- [Giant Outer Transiting Exoplanet Mass \(GOT 'EM\) Survey: III. Recovery and Confirmation of a Temperate, Mildly Eccentric, Single-Transit Jupiter Orbiting TOI-2010](#)

Christopher R. Mann, Paul Dalba, David Lafrenière (+48 more)
The Astronomical Journal, 166, 6, 2023

- * [TOI-199 b: A well-characterized 100-day transiting warm giant planet with TTVs seen from Antarctica](#)

Melissa Hobson, Trifon Trifonov, Thomas Hennings (+49 more)
The Astronomical Journal, 166, 5, 2023

- * [VaTEST. II. Statistical Validation of 11 TESS-detected Exoplanets Orbiting K-type Stars](#)

Priyashkumar Mistry, Kamlesh Pathak, Aniket Prasad (+48 more)
The Astronomical Journal, 166, 1, 2023

- [Validation of TOI-1221 b, a warm sub-Neptune exhibiting TTVs around a Sun-like star](#)

Christopher R. Mann, David Lafrenière, Diana Dragomir (+24 more)
The Astronomical Journal, 165, 5, 2023

- * [Detection of Atmospheric Escape from Four Young Mini Neptunes](#)

Michael Zhang, Heather A. Knutson, Fei Dai (+6 more)
The Astronomical Journal, 165, 62, 2023

* [The TESS-Keck Survey. XI. Mass Measurements for Four Transiting sub-Neptunes orbiting K dwarf TOI-1246](#)

Emma Turtelboom, Lauren M. Weiss, Courtney D. Dressing (+76 more)
The Astronomical Journal, 163, 6, 2022

* [The TESS-Keck Survey. VIII. Confirmation of a Transiting Giant Planet on an Eccentric 261 Day Orbit with the Automated Planet Finder Telescope](#)

Paul A. Dalba, Stephen R. Kane, Diana Dragomir (+72 more)
The Astronomical Journal, 163, 61, 2022

[A multi-mass velocity dispersion model of 47 Tucanae indicates no evidence for an intermediate mass black hole](#)

Christopher R. Mann, Harvey Richer, Jeremy Heyl (+5 more)
The Astrophysical Journal, 875, 1, 2019

[Planetary Embryo Bow Shocks as a Mechanism for Chondrule Formation](#)

Christopher R. Mann, Aaron C. Boley, and Melissa A. Morris
The Astrophysical Journal, 818, 2, 2016

Under revision (awaiting final acceptance)

[Identification of the Top TESS Objects of Interest for Atmospheric Characterization of Transiting Exoplanets with JWST](#)

Benjamin Hord, Eliza Kempton, Thomas Mikal-Evans (+142 more)
(arXiv)

In preparation (Final titles TBD)

Exo-Dragonfly: Adapting the Dragonfly Telephoto Array to the observation of exoplanet transits (PI: **Christopher Mann**)

The Canadian NEOSat Mission: Photometric Performance (PI: **Christopher Mann**)

* Confirmation of exoplanet TOI-1823.01 (PI: *Hanna Kellermann*)

HONOURS & AWARDS

2023—2025	NSERC Post-Doctoral Fellowship (PDF) (declined)	\$90,000
2023—2025	CSA Supplement to NSERC PDF (declined)	\$20,000
2019—2022	NSERC Alexander Graham Bell CGS-D Awarded to top-ranked applicants in PhD programs	\$105,000
2019	Best research poster award, CASCA	\$200
2017—2018	Catalyst Paper Corporation Fellowship	\$16,000
2015	NSERC Undergraduate Student Research Award (USRA)	\$4,500
2014	Science Undergraduate Research (SURE) Award	\$2,500
2010—2011	Premier Undergraduate Scholarships and Wesbrook Scholars Must be among top 10% of faculty	--
2009—2011	Trek Excellence Scholarship (2 years) Must be in the top 5% of year, faculty, and school	\$1,500 x 2

2009—2011	Membership to Golden Key Society Must be among top 15% of your university year	--
2008	UBC President's Entrance Scholarship	\$2,000

CONFERENCES & ACADEMIC MEETINGS

2022	Centre for Research in Astrophysics of Quebec (CRAQ) Annual General Meeting <ul style="list-style-type: none"> ○ Series of topical lectures with a focus on student research ○ Presented 10-minute talk on NEOSat research 	
2017—2022	Canadian Astronomical Society – Société Canadienne d'Astronomie (CASCA) Annual General Meeting: In-person and virtual <ul style="list-style-type: none"> ○ Virtual presenters, poster competition, and networking ○ Placed 1st in poster competition for my work with Dragonfly (2019) ○ Gave 15-minute presentation on my preliminary intermediate mass black hole master's research results (2017) 	
2019	Mauna Kea Grad School Large observatory experience program for graduate students <ul style="list-style-type: none"> ○ Spent one week visiting Mauna Kea observatories and headquarters. ○ Gained hands-on proposal writing, observing, and telescope operation experience. 	
2019	Centre for Research in Astrophysics of Quebec (CRAQ) Annual graduate student summer school <ul style="list-style-type: none"> ○ Series of topical lectures and workshops, themed around Stellar Astrophysics 	
2017	Gemini North & Canada-France-Hawaii Telescope (CFHT) headquarters Professional meeting: Hilo and Waimea (respectively), Hawaii, USA <ul style="list-style-type: none"> ○ Gave 20-minute presentations on my intermediate mass black hole research (master's) to researchers and staff of both institutions. ○ Networked and toured observatory and headquarters facilities. 	
2015	American Astronomical Society 225 th Annual Meeting: Seattle, USA <ul style="list-style-type: none"> ○ Presented in a judged poster contest on my work investigating planetary embryo bow shocks as potential thermal processing sites for chondrules. ○ Attended several keynote presentations. 	

GROUP & ASSOCIATION MEMBERSHIPS

2021—present	TESS Single Transiting Planet Candidate (TSTPC) working group
2018—present	TESS Exoplanet Follow-up Observing Program (ExoFOP-TESS)
2018—present	Institute for Research on Exoplanets (iREx)
2017—present	CASCA
2015—2016	American Astronomical Society

REFERENCES

Name: **Dr. Christian Marois**
Position: SPIDERS Project Lead
Relationship: PDF supervisor
Institution: National Research Council of Canada – Herzberg Astronomy & Astrophysics
Email: Christian.Marois@nrc-cnrc.gc.ca

Name: **Dr. David Lafrenière**
Position: Professor
Relationship: PhD Supervisor
Institution: Université de Montréal
Email: david.lafreniere@umontreal.ca

Name: **Dr. Diana Dragomir**
Position: Professor
Relationship: Head of TESS Single Transit Planet Candidate (TSTPC) working group
Institution: University of New Mexico
Email: dragomir@unm.edu