

Ryan E. Cloutier

MP 1203A – 60 St. George Street – Toronto ON Canada M5S 1A7

☎ (416) 978 6261 • ✉ cloutier@astro.utoronto.ca

🌐 www.astro.utoronto.ca/~cloutier/

Education

PhD in Astronomy & Astrophysics

University of Toronto

2014–2019

Supervisors: Kristen Menou (UofT) & René Doyon (UdeM)

Expected completion date: Summer 2019

Honours Bachelor of Science with Distinction

Physics & Astronomy, University of Toronto

2009–2014

Supervisor: Ray Jayawardhana

Doctoral Thesis

Title (tentative): *An application of Bayesian inference and Gaussian processes to the detection and characterization of distant worlds around nearby M dwarfs*

Supervisors: Kristen Menou (UofT) & René Doyon (UdeM)

Undergraduate Thesis

Title: *A deep Spitzer survey of circumstellar disks in the young Double Cluster, η and χ Persei*

Supervisor: Ray Jayawardhana

Research Experience

Graduate.....

PhD Candidate

*Department of Astronomy & Astrophysics (UofT), Centre for Planetary Sciences,
and the Institute for Research on Exoplanets*

2015–present

Graduate Research Courses

Department of Astronomy & Astrophysics (UofT) and Centre for Planetary Sciences 2014–2015

Undergraduate.....

Undergraduate Researcher Positions

*Canadian Institute for Theoretical Astrophysics, Dunlap Institute for Astronomy & Astrophysics,
and the Department of Astronomy & Astrophysics*

2012–2014

First Author Refereed Publications

Cloutier, R. et al. *Predictions of planet detections with near infrared radial velocities in the up-coming SPIRou Legacy Survey-Planet Search*, 2018, AJ, 155, 93

Cloutier, R. et al. *Characterization of the K2-18 multi-planetary system with HARPS: a habitable zone super-Earth and discovery of a second, warm super-Earth on a non-coplanar orbit*, 2017, A&A 608, A35

Cloutier, R. et al. *On the radial velocity detection of additional planets in transiting, slowly rotating M-dwarf systems: the case of GJ 1132*, 2017, AJ, 153, 9

Cloutier, R. & Triaud A. H. M. J. *Prospects for detecting the Rossiter-McLaughlin effect of Earth-like planets: the test case of TRAPPIST-1b and c*, 2016, MNRAS, 462, 4018

Cloutier, R., Tamayo, D., & Valencia, D. *Could Jupiter or Saturn have ejected a fifth giant planet?* 2015, ApJ, 813, 8

Cloutier, R. et al. *A deep Spitzer survey of circumstellar disks in the young Double Cluster, η and χ Persei*, 2014, ApJ, 796, 127

Cloutier, R. & Lin, M. K. *Orbital migration of giant planets induced by gravitationally unstable gaps: the effect of planet mass*, 2013, MNRAS, 434, 621

Contributing Author Refereed Publications

Bonfils, X., Almenara, J.M., **Cloutier, R.**, et al. *Radial velocity follow-up of GJ 1132 with HARPS: A precise mass for planet 'b' and the discovery of a second planet*, 2018, A&A accepted, arXiv 1806.03870

Currie, T., Grady, C., **Cloutier, R.**, et al. *The Matryoshka Disk: Keck/NIRC2 discovery of a Solar system-scale, radially segregated residual protoplanetary disk around HD 141569A*, 2016, ApJL, 819, L26

Currie, T., **Cloutier, R.**, Brittain, S., et al. *Resolving the HD 100546 protoplanetary system with the Gemini Planet Imager: evidence for multiple forming, accreting planets*, 2015, ApJL, 814, L27

Currie, T., Burrows, A., Girard, J., **Cloutier, R.**, et al. *Deep thermal infrared imaging of HR 8799 bcde: new atmospheric constraints and limits on a fifth planet*, 2014, ApJ, 795, 133

Currie, T., **Cloutier, R.**, Debes, J., Kenyon, S., & Kaisler, D. *A deep Keck/NIRC2 search for thermal emission from planetary companions orbiting Fomalhaut*, 2013, ApJL, 777, L6

Conference Proceedings

Lin, M. K. & **Cloutier, R.** *Gravitational instability of planetary gaps and its effect on orbital migration*, 2014, IAU Symposium, 299, 218

Non-Refereed Publications

Bouchy, F., et al. (including **Cloutier, R.**) *Near-InfraRed Planet Searcher to join HARPS on the ESO 3.6-metre Telescope*, 2017, The ESO Messenger, No. 169

Awards & Recognitions

NSERC Postgraduate Scholarship - Doctoral

Department of Astronomy & Astrophysics (UofT), \$63 000 2016-2019

Allen Yen Award for Excellence in Research

Department of Astronomy & Astrophysics (UofT), \$1000 2017

Ontario Graduate Scholarship

Department of Astronomy & Astrophysics (UofT), \$15 000 2015-2016

Lachlan Gilchrist Fellowship

Department of Astronomy & Astrophysics (UofT), \$5000 \times 3 2015-2018

School of Graduate Studies: Conference Travel Grant

Department of Astronomy & Astrophysics (UofT) and Centre for Planetary Sciences 2015

Dunlap Institute Travel Grant

Dunlap Institute for Astronomy & Astrophysics 2015

Centre for Planetary Sciences Graduate Fellowship

Centre for Planetary Sciences, \$10 000 2014-2016

NSERC Canadian Graduate Scholarship - Master's

Department of Astronomy & Astrophysics (UofT), \$17 500 2014-2015

Mary H. Beatty Scholarship

Department of Astronomy & Astrophysics (UofT), \$5000 2014-2015

Summer Undergraduate Research Program Award

Dunlap Institute for Astronomy & Astrophysics (UofT), \$9000 2013

CITA Undergraduate Summer Research Award

Canadian Institute for Theoretical Astrophysics, \$8000 2012

Conference Presentations

Talks.....		
2nd Rencontres de Vietnam on Exoplanetary Science	Quy Nhon, Vietnam	
<i>Discovering the Closest Habitable Worlds: Planet Detection Predictions for the SPIRou Legacy Survey-Planet Search</i>		2018
CASCA 2017	Edmonton, AB	
<i>Canadians on the Ground Searching for the Closest Habitable Worlds</i>		2017
SPIRou Science Meeting	Nice, France	
<i>Simulated Searches for Small Radial Velocity Planets Amid Stellar Jitter</i>		2016
CASCA 2016	Winnipeg, MB	
<i>Detecting Potentially Habitable Earth-like Planets around Cool Stars with SPIRou</i>		2016
Emerging Researchers in Exoplanet Science II	Cornell U.	
<i>Detecting Potentially Habitable Earth-like Planets around Cool Stars with SPIRou</i>		2016

Posters.....		
Extremely Precise Radial Velocities III	Penn State	
<i>Planet detection predictions from simulations of the SPIRou Legacy Survey Planet Search</i>		2017
Extreme Solar Systems III	Waikoloa, HI	
<i>The Rossiter-McLaughlin effect of planets transiting M-dwarfs and its impact on planet detection in radial velocity surveys</i>		2015
CASCA 2015	Hamilton, ON	
<i>Could Jupiter have ejected a fifth giant planet from the solar system?</i>		2015
In the Spirit of Lyot	Montréal, QC	
<i>An adaptive, locally-optimized method for imaging and characterizing exoplanets and disks</i>		2015
IAUS 299	Victoria, BC	
<i>Gravitational instability of planetary gaps and its effect on orbital migration</i>		2013

Media Coverage

Two Super-Earths around the red dwarf K2-18		
<i>University of Toronto & Institute for Research on Exoplanets</i>		December 2017
<i>UofT press release, iREx Press release, CTV television interview</i>		
Astronomers spy a nursery of baby exoplanets		
<i>Gemini Observatory</i>		November 2015
<i>Gemini Observatory press release</i>		
Who kicked a giant planet out of the solar system 4 billions years ago? We're looking at you Jupiter		
<i>University of Toronto</i>		October 2015

Teaching & Mentoring

Undergraduate Teaching.....

Teaching Assistant

AST251: Life on Other Worlds

Winter 2018

- Creating course content
- Facilitating in-class discussions

Teaching Assistant

AST121: The Origin and Evolution of the Universe

Winter 2018

- Leading help sessions
- Grading exams and assignments

Teaching Assistant

AST221: Stars and Planets

Fall 2017

- Leading tutorial sessions
- Holding office hours

Head Teaching Assistant

ASTA02 (UTSC): Beyond the Sun and Planets

Winter 2017

Head Teaching Assistant

ASTA01 (UTSC): The Sun and Planets

Fall 2016

- Designing weekly tutorials
- Managing teaching assistants
- Giving guest lectures
- Holding office hours
- Leading tutorial sessions
- Managing student grades

Teaching Assistant

CSCC01 (UTSC): Introduction to Software Engineering

Fall 2016

- Advising students on astronomy topics related to their course project
- Holding office hours
- Answering student emails

Head Teaching Assistant

AST 201: Star and Galaxies

Winter 2016

Head Teaching Assistant

AST 101: The Sun and its Neighbours

Fall 2015

- Designing weekly tutorials
- Managing teaching assistants
- Leading tutorial sessions
- Presenting planetarium shows

Teaching Assistant

AST 101: The Sun and its Neighbours

2014-2015, 2018

Teaching Assistant

AST 201: Star and Galaxies

2014-2015

- Conducting online office hours
- Grading assignments and exams
- Leading campus observing sessions

Workshops.....

Workshop on Gaussian process regression in python

Centre for Planetary Sciences

Fall 2016

I led a half-day practical workshop on Gaussian process regression in python for both graduate students and post-doctoral researchers as part of the series of *CPS Machine Learning Days*.

Introductory workshop for undergraduate STEM researchers

Department of Astronomy & Astrophysics

Summer 2015

A two-day workshop for undergraduate student researchers enrolled in the Dunlap Institute's summer undergraduate research program. The content was focused on data-fitting/analysis and statistics for astronomers.

Workshop for Ontario secondary school science teachers

York University

Summer 2015

A two-day workshop aimed at equipping teachers with the tools and skills to effectively teach astronomy using hands-on activities designed for Grade 9 and Grade 12 students.

Student Mentoring.....

Mentoring incoming PhD students in their first-year

2015-2016

- Alyssa Obertas (*University of British Columbia*)
- Adiv Paradise (*University of Minnesota*)

Outreach

Public Lectures & Presentations.....

AstroTour Public Lecture Series

University of Toronto

Fall 2017

The Long Paths Towards Finding Habitable Exo-Worlds

Graduate Speaker Series: Astronomy & Astrophysics

University of Toronto

Fall 2017

The Long Paths Towards Finding Habitable Exo-Worlds

Mystical Landscapes Planetarium Show

Art Gallery of Ontario

Winter 2016

Public Lecture

North York Astronomical Association

Fall 2015

Studying the Early Dynamical Evolution of the Solar System

UofT Planetarium

Planetarium Operator

2015-present

Volunteer Positions.....

UofT AstroTours

Executive Committee Member

2015–2017

Miscellaneous Outreach Events

Events Include:

2012–present

- August 2017 Solar Eclipse
- Astronomy on Tap
- September 2016 Lunar Eclipse
- Science Unlimited Summer Camp
- Science Rendezvous Street Festival
- Keynote Lectures
- June 2012 Transit of Venus

Professional Development

Institute for Scientist and Engineer Educators:

Professional Development Program

Program Participant

2015

A three-stage program on inquiry-based learning in undergraduate science including the design and execution of an authentic inquiry activity with undergraduate summer researchers.

Scinet Certificate in Scientific Computing

Successfully Completed

2015

Completion of the required computer science courses hosted at Scinet: Canada's largest supercomputer centre.

Teaching Assistant's Training Program:

Teaching Fundamentals Certificate

Successfully Completed

2015

Completion of the undergraduate teaching qualification program aimed at developing effective teaching strategies and to broaden our understanding of how undergraduate students typically learn.

Dunlap Institute Summer School:

Introduction to Astronomical Instrumentation

Successfully Completed

2013

Completion of the week-long lecture/practical series on optics, telescopes, and detectors.

Professional Positions

Journal Referee

The Astronomical Journal, Astronomy & Astrophysics

Committee member:

'Topical Team in Space Explorations: Origins (Galaxies, Stars, & Planets)'

Canadian Space Agency

I am part of the committee of Canadian astronomers tasked with evaluating the scientific benefits, challenges, and opportunities for Canadian participation in future science-based space missions. We advise the Canadian Space Agency on the ways in which we feel Canada should proceed in the field of astronomical discovery.