Tim Hallatt

PhD Student · Astrophysics

thallatt@physics.mcgill.ca | https://thallatt.github.io/ | https://www.linkedin.com/in/tim-hallatt-904539273/

Education

McGill University *Montréal, Quebec*

PhD, Physics *Sept. 2021 - present*

- advisor: Dr. Eve J. Lee
- thesis title: "Planet Formation and Interiors Across Space and Time"
- topic: theoretical planet formation
- tools: `MESA` hydrodynamics code, `REBOUND` dynamics code, `Python`, `gnuplot`, `Fortran`

McGill University *Montréal, Quebec*

MSc, Physics *Sept. 2019 - Sept. 2021*

- advisor: Dr. Eve J. Lee
- thesis title: "Leveraging Exoplanet Occurrence Rates to Test Planet Formation Theory"
- topic: theoretical planet formation

University of Western Ontario *London, Ontario*

Honours Specialization, Physics *Sept. 2015 - April, 2019*

- honours thesis advisor: Dr. Paul Wiegert
- thesis title:"The Dynamics of Interstellar Asteroids and Comets Within the Galaxy"
- topic: dynamics

Publications

Published/Submitted

Hallatt, T, Lee, Eve J., 2021. Sculpting the sub-Saturn Occurrence Rate via Atmospheric Mass Loss. Astrophysical Journal, vol. 924, no. 9; `https://iopscience.iop.org/article/10.3847/1538-4357/ac32c9`

Hallatt, T, Lee, Eve J., 2020. Can Large-Scale Migration Explain the Giant Planet Occurrence Rate? Astrophysical Journal, vol. 904, no. 2; `https://iopscience.iop.org/article/10.3847/1538-4357/abc1d7)`

Hallatt, T, Wiegert, Paul, 2020. The Dynamics of Interstellar Asteroids and Comets within the Galaxy: an Assessment of Local Candidate Source Regions for 1I/'Oumuamua and 2I/Borisov. Astronomical Journal, vol. 159, no. 4; `https://iopscience.iop.org/article/10.3847/1538-3881/ab7336)`

Cadieux, Charles, ... **Hallatt, T**, ... 2023. New Mass and Radius Constraints on the LHS 1140 Planets – LHS 1140 b is Either a Temperate Mini-Neptune or a Water World (submitted; `https://arxiv.org/abs/2310.15490`).

In-Prep

Hallatt, T, Lee, Eve J., 2023. On the Planet-Forming Environment of the Milky Way's Thick Disk.

White Papers

Benneke, Bjorn, ... **Hallatt, T**, ... 2019. Exoplanet instrumentation in the 2020s: Canada's pathway towards searching for life on potentially Earth-like exoplanets. Canadian Long Range Plan for Astronomy and Astrophysics White Papers, LRP2020. Online at https://www.zenodo.org/communities/lrp2020, id.65 `https://ui.adsabs.harvard.edu/abs/2019clrp.2020...64B/abstract)`

Seminars & Presentations

September 2023. *On the Planet-Forming Environment of the Milky Way's Thick Disk*. Stars & Planets Seminar, Yale Univeristy, USA. (**Invited**)

July 2023. *On the Formation of Planets in the Milky Way's Thick Disk*. Oral presentation. Towards Other Earths III: the Planet-Star Connection, Insitituto de Astrofísica e Ciências do Espaço, Porto, Portugal

June 2023. *On the Formation of Planets in the Milky Way's Thick Disk*. Oral presentation. Emerging Researchers in Exoplanet Science, Yale University, USA.

May 2021. *Sculpting the sub-Saturn Occurrence Rate via Atmospheric Mass Loss*. Oral presentation. High Energy Exoplanets, European Space Agency XMM-Newton Workshop, Online.

November 2020. *Can Large-Scale Migration Explain the Giant Planet Occurrence Rate?*. Oral presentation. ExoDem Conference, Caltech, Online.

October 2020. *Can Large-Scale Migration Explain the Giant Planet Occurrence Rate?*. Oral presentation. Exocoffee, Max Planck Institute for Astronomy, Online.

August 2020. *The Dynamics of Interstellar Asteroids and Comets Within the Galaxy*. Oral presentation. Division of Dynamical Astronomers Meeting, Online. Link to presentation: `https://vimeo.com/442145831`

June 2020. *The Dynamics of Interstellar Asteroids and Comets Within the Galaxy*. Poster presentation. American Astronomical Society meeting, Online.

Select Awards & Fellowships

2021	**Alexander Graham Bell CGS-D**, NSERC	*$ 105,000*
2021	**Perseverance Scholarship**, McGill University	*$ 1200*
2021	**L. Trottier Science Accelerator fellowship**, McGill University	*$ 5000*
2020	**Alexander Graham Bell CGS-M**, NSERC	*$ 17,500*
2020	**Technologies for Exoplanetary Science Fellowship**, NSERC	*$ 7000*
2019	**Donald R. Hay Prize (for best thesis)**, Physics & Astronomy Dept., University of Western Ontario	*$ 300*
2019	**Dr. Gérard Hébert Scholarship in Physics (for community service, academic excellence, research potential)**, Physics & Astronomy Dept., University of Western Ontario	*$ 1700*

Additional Research Experience

University of Tübingen; Institute for Theoretical Astrophysics *Tübingen, Germany*

Advisor: Dr. Rolf Kuiper *May 2018 - Aug. 2018*

- radiation-hydrodynamics simulations of HII regions
- tools: `PLUTO` hydrodynamics code, `Makemake` & `Sedna` radiation transport and photoionization solvers

Media Citations & Interviews

Astronomy Magazine: Our Galaxy's Marvelous Rogues and Misfits; `https://astronomy.com/magazine/news/2021/04/our-galaxys-marvelous-rogues-and-misfits/`

Scientific American: Mystery of Interstellar Visitor 'Oumuamua Gets Trickier; `https://www.scientificamerican.com/article/mystery-of-interstellar-visitor-oumuamua-gets-trickier/`

Nature: How Two Intruders From Interstellar Space are Upending Astronomy; `https://www.nature.com/articles/d41586-019-03530-3`