TO MAGNIFICO RETTORE OF UNIVERSITA' DEGLI STUDI DI MILANO
I the undersigned asks to participate in the public selection, for qualifications and examinations, for the awarding of a type A post-doc fellowship

Taylor Kutra

CURRICULUM VITAE

PERSONAL INFORMATION

Surname	Kutra
Name	Taylor
Date of birth	27 September, 1995

PRESENT OCCUPATION

Appointment	Structure
PhD Candidate	Department of Astronomy and Astrophysics, University of Toronto

EDUCATION AND TRAINING

Degree	Course of studies	University	year of achievement of the degree
Degree	Bachelor of Arts and Sciences	Quest University Canada	2017
Specialization	Astronomy		
PhD	Astronomy and Astrophysics	University of Toronto	2023 (anticipated)
Master	Astronomy and Astrophysics	University of Toronto	Direct-Entry PhD program does not award Masters

REGISTRATION IN PROFESSIONAL ASSOCIATIONS

Date of registration	Association	City
05/04/2017	American Astronomical Society	Toronto

FOREIGN LANGUAGES

Languages	level of knowledge
Spanish	Beginner

AWARDS, ACKNOWLEDGEMENTS, SCHOLARSHIPS

Year	Description of award
2021-2023	National Science Research Council of Canada Postgraduate Scholarship — Doctoral
2022	Walter C. Sumner Memorial Fellowship
2020	Queen Elizabeth II Graduate Scholarship in Science & Technology
2019	Robert Shelly Graduate Scholarship
2018	University of Toronto Fellowship

TRAINING OR RESEARCH ACTIVITY

Of all the areas of astrophysics, the scales involved in forming planets span the most orders of magnitude. One of the biggest outstanding questions in astrophysics is how planet formation proceeds. Everything from sub-micron dust grains that are responsible for passively heating a protoplanetary disk, to centemeter sized pebbles which accrete to form planets, and gaps and rings in protoplanetary disks that are tens of AU in diameter, can effect the planets that eventually form.

During my PhD studies, I have become heavily invested in a particular aspect of this process, namely simulating a starlight-driven instability in protoplanetary disks, which has far-reaching consequences. I use novel hydrodynamical and radiative instabilities in protoplanetary disks to produce these sub-structures without invoking planets. I also use statistics to test models of planet formation with the goal of linking the observed populations of exoplanets to the environments in which they form.

PROJECT ACTIVITY

Year	Project
2018-2021	Super-Earths and Sub-Neptunes are Insensitive to Stellar Metallicity (Published — included) Characterizing relationships between host star mass, metallicity and planet size and constraining the occurrence rates of the Kepler planets.
2019	Secular Gravitational Instability with Drifting Dust (in preparation) A linear perturbation analysis of the Secular Gravitational Instability (SGI) with drifting dust.
2019-2023	Hydrodynamics of the Irradiation Instability (in preparation — draft included) The first 3D hydrodynamic simulations of the Irradiation Instability for protoplanetary disks.
2022-2023	Modelling of the Gas Disk Orbiting SDSS J1228+1040 (in preparation) Supervising an undergraduate student to fit a physical disk model to the gas disk surrounding the metal-polluted white dwarf SDSS J1228+104 using MCMC.

PATENTS

Patent
None

CONGRESSES AND SEMINARS

Date	Title	Place
Nov. 2022	Hydrodynamics of the Irradiation Instability	Great Lakes Exoplanet Area Meeting, Ohio State University (Presentation)
Oct. 2022	Hydrodynamics of a Starlight-Driven Instability in Protoplanetary Disks	Tea Talks, Indianna University (Invited Presentation)
Oct. 2022	Hydrodynamics of the Irradiation Instability	AAS Division of Planetary Sciences Meeting, London Ontario (Presentation)
Sept. 2022	A Model of Self-COnsistent Heating for a Protoplanetary Disk	Toronto Astrophysics Talks, University of Toronto (Presentation)
March 2022	The Hydrodynamics of a Passively Irradiated Disk	Prof. Norman Murray's Group Meeting, Canadian Institute of Theoretical Astrophysics (Invited Presentation)
2021	The Role of Metallicity in forming Super-Earths and Sub-Neptunes	Spring Symposium: Towards the Comprehensive Characterization of Exoplanets, Space Telescope Science Institute (Presentation)
20219	Kepler Planets and Metallicity	Emerging Researchers in Exoplanet Science V, Cornell University (Presentation)

PUBLICATIONS

Articles in journals
Super-Earths and Sub-Neptunes are insensitive to Stellar Metallicity, Astronomical Journal, 2021

OTHER INFORMATION

References:
Prof. Yanqin Wu (University of Toronto): yanqin.wu@utoronto.ca
Prof. Norman Murray (Canadian Institute for Theoretical Astrophysics): murray@cita.utoronto.ca
Prof. Yoram Lithwick (Northwestern University): ylithwick@gmail.com

Declarations given in the present curriculum must be considered released according to art. 46 and 47 of DPR n. 445/2000.

The present curriculum does not contain confidential and legal information according to art. 4, paragraph 1, points d) and e) of D.Lgs. 30.06.2003 n. 196.

Place and date: Toronto, 9 January 2023

SIGNATURE