

Job Summary

Category: Postdoctoral Positions and Fellowships

Institution: University of Toronto

Department: Canadian Institute for Theoretical Astrophysics (CITA)

Expected Start Date: October, 2026

Duration: 3 Years

Work Arrangement: In-Person

In-Person Location(s): Toronto ON Canada

Job Description

Postdoctoral Researcher in Exoplanet Modeling and Inference

The University of Toronto invites applications for a postdoctoral researcher to join a research program focused on physics-based modeling and data-driven inference of exoplanets, with an emphasis on planetary interiors, atmospheres, and evolution. The postdoctoral researcher will be part of an international effort to develop next-generation computational frameworks that connect physical models with limited observations. Research topics may span a range of topics, including mitigation of stellar activity in M dwarf systems for transiting atmosphere studies, as well as planetary interiors and evolution across diverse regimes, focusing on small rocky planets and sub-Neptune-sized exoplanets.

Description of duties

- Build and run physics-based models of exoplanet interiors and atmospheres, including linking structure, composition, and thermal evolution.
- Design and execute large model grids and ensembles to explore how observable properties depend on underlying planetary parameters.
- Develop and apply inference frameworks that connect models to data, extracting constraints from sparse, noisy, and heterogeneous observations.
- Implement and maintain modular, well-documented code that can be extended by collaborators and reused across projects.
- Work closely with observers to interpret current datasets (e.g., JWST) and to define model predictions that inform future observations.
- Compare model outputs directly to data, identify mismatches, and iterate on models to improve physical realism and predictive power.
- Contribute to team discussions, papers, and collaborative projects that bridge modeling and observation.

Required Qualifications

- PhD in astrophysics, planetary science, or a related field.
- Strong background in computational modeling and/or statistical inference, with demonstrated experience in scientific programming.
- Experience with planetary interiors, atmospheric modeling, or related physical systems is highly desirable.

- Familiarity with machine learning or emulator-based approaches for accelerating model evaluation is considered an asset.
- Experience working with and managing large observational or simulated datasets, including data pipelines or analysis workflows.
- Ability to work effectively in a collaborative, interdisciplinary environment.

Compensation

An annual salary of \$80,000, plus benefits. Funds will be available for travel and other research expenses.

Please note that if the minimum rates stipulated in the collective agreement are higher than rates stated in this posting, the minimum rates stated in the collective agreement will take precedence.

Application Instructions

Applicants will be asked to submit a curriculum vitae, statement of research interests and arrange for three letters of recommendation.

We only accept electronic submissions. Please send applications to seager@cita.utoronto.ca .

The deadline for applications and all letters of recommendation is April 30, 2026.

Please contact seager@cita.utoronto.ca for inquiries.

Diversity Statement

The University of Toronto embraces Diversity and is building a culture of belonging that increases our capacity to effectively address and serve the interests of our global community. We strongly encourage applications from Indigenous Peoples, Black and racialized persons, women, persons with disabilities, and people of diverse sexual and gender identities. We value applicants who have demonstrated a commitment to equity, diversity and inclusion and recognize that diverse perspectives, experiences, and expertise are essential to strengthening our academic mission.

Accessibility Statement

The University strives to be an equitable and inclusive community, and proactively seeks to increase diversity among its community members. Our values regarding equity and diversity are linked with our unwavering commitment to excellence in the pursuit of our academic mission. The University is committed to the principles of the Accessibility for Ontarians with Disabilities Act (AODA). As such, we strive to make our recruitment, assessment and selection processes as accessible as possible and provide accommodations as required for applicants with disabilities.