

Earth & Planetary Sciences *at* Harvard University

## Special Seminar

Friday, June 9, 2023 at 12:00 PM  
Haller Hall, 24 Oxford Street, Cambridge

# Molten Exoplanets as a Window into the Earliest Earth

**Tim Lichtenberg**



**Assistant Professor**  
**Kapteyn Astronomical Institute**  
**University of Groningen**

The scarcity of geochemical constraints on the Hadean climate limits our understanding of the planetary environment that gave rise to life on the earliest Earth. Current and upcoming exoplanet surveys, however, significantly widen our view of the distribution and variability of rocky planets and their chemical inventories, giving opportunity to test main scenarios of early planetary evolution and atmospheric formation. I will describe how rocky exoplanets in a partially or fully molten state open a novel window into key processes that shape the earliest, high-temperature evolutionary regimes of rocky worlds, such as core formation, redox evolution, volatile partitioning, and runaway greenhouse climates. Increasing reconnaissance of high-temperature super-Earths in the next few years will be the next key step toward the characterisation of prebiotic and potentially habitable exoplanets.

A light lunch will be served