

## **Department of Physics and Astronomy Colloquium Series**

**Tuesday, November 15th, 2022, 2:30pm in PSE 317**

**Speaker:** Prof. Ryan Cloutier

**Institution:** McMaster University

**Title:** The Origin of the Galaxy's Most Common Planets Around its Most Common Stars

**Abstract:**

Is the M dwarf radius valley a direct result of planet formation, or does it require a thermally driven atmospheric escape process to be explained? I will highlight three recent lines of observational evidence that suggest that, unlike around Sun-like stars, the M dwarf radius valley is likely a product of the planet formation process itself. That is despite the fact that M dwarfs exhibit extended phases of elevated XUV activity and flares during their young, which would efficiently drive hydrodynamic escape of planetary atmospheres. These results indicate that sub-Neptunes around M dwarfs likely formed beyond the snow line with water-rich compositions, and are not (in most cases) enveloped in primordial H/He gas.