
EAPS Planetary Lunch Colloquium Series (PICS)

Mary Knapp

PhD Candidate

Massachusetts Institute of Technology

Tuesday, November 15th

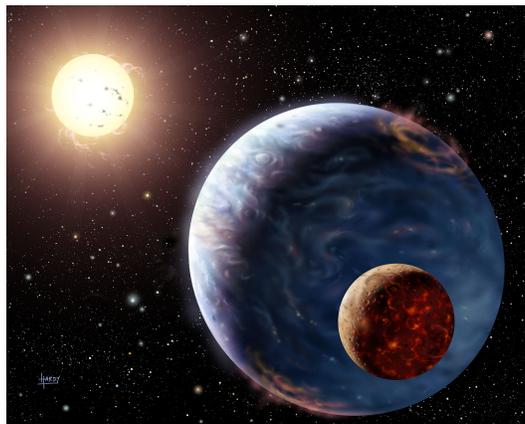
12:30pm

54-517

Searching for Radio Emission from Exoplanets: Getting to Know the Neighbors

All Solar System planets with strong magnetic fields exhibit strong low frequency radio emission. In the 1950s, ground-based low frequency observations were used to detect Jupiter's magnetic field strength and rotation period long before spacecraft visited the planet. Since that success, radio observations, in concert with in-situ magnetic field measurements, have been used to characterize the magnetic fields of Saturn, Uranus, and Neptune. This talk focuses on the extension of low frequency planetary observations to exoplanets.

I will describe an effort to survey the 10 nearest stars in the Northern hemisphere for low frequency radio emission using LOFAR and the VLA, with an emphasis on recent VLA results. The purpose of this survey is to set firm upper limits on radio emission from stars and yet-undiscovered planets orbiting our nearest stellar neighbors. Bounding the radio emission from these stars will inform discussions of habitability for any planets discovered in these systems. I will describe strong detections of stellar radio emission at 3 GHz from Ross 614 during March 2016, but not in later observations. I also present upper limits on radio emission from the other survey targets. Additionally, I will describe a current radio observation campaign focused on the recently discovered TRAPPIST-1 system. Finally, I will present a technology development effort to lay the groundwork for a future space-based low frequency interferometer capable of detecting radio emission for planets with Earth-like magnetic fields.



For more information, contact John Biersteker (jo22395@mit.edu)