BOSTON UNIVERSITY

Boston University College of Arts & Sciences Center for Space Physics

2019—2020 SPACE PHYSICS SEMINAR SERIES

A Window into Planetary Magnetism with Brown Dwarf Exo-Aurorae

Planetary magnetic fields influence atmospheric evaporation from space weather, yield insights into planet interiors, and are essential for producing aurorae. The most direct way of measuring magnetic fields on exoplanets is by observing exo-aurorae at radio frequencies. The first detection of exo-aurorae on the ~12.7 MJ brown dwarf SIMP J01365662+0933473 marks the beginning of an era for directly probing magnetism at planetary masses. Low-frequency radio arrays such as the Owens Valley LWA, LOFAR, and the Square Kilometre Array will soon be sensitive to exoplanet aurorae, providing a new means of exoplanet detection and characterization. Now is a critical time to prepare for these upcoming searches by harnessing detailed studies of exo-aurorae on observationally accessible exoplanet analogs, planetary-mass and cold brown dwarfs. I will synthesize the state of the art for searches of brown dwarf exo-aurorae and discuss implications for and highlight opportunities to probe exoplanet magnetism with the next generation of ground- and space-based radio facilities.

Thursday, October 17th

4:00-5:00 p.m.

725 Commonwealth Ave | Room 502

Melodie Kao

Arizona State University