

**MELODIE KAO**

**UC Santa Cruz**

# **BROWN DWARF RADIO EMISSION: A WINDOW INTO SUBSTELLAR MAGNETOSPHERES**

**25 January 2022 • 3:30 pm EST • *Virtual Seminar***

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 and their brown dwarf cousins is by observing exo-aurorae at radio frequencies. Additionally, a quasi-stable and non-auroral quiescent radio component accompanies all known examples of substellar exo-aurorae and provides an alternative means for assessing the physics occurring in substellar magnetospheres. Low-frequency radio arrays will soon be sensitive to exoplanet radio emission and provide a new means of exoplanet detection and characterization. Now is a critical time to prepare for these upcoming searches by harnessing detailed studies of radio emission on observationally accessible exoplanet analogs: planetary-mass and cold brown dwarfs. I will synthesize the state of the art for brown dwarf magnetospheric radio studies, discuss implications for exoplanet magnetism, and highlight opportunities for the next generation of ground- and space-based radio facilities.

