

Technical Page

Proposal Type: Regular
 General Category: Astronomy
 Sub-Category: Continuum
 Observation Category: Galactic
 Total Time Requested: 70 Hours
 Minimum Useful Time: 2 hours

Proposal Title: A search for radio emission from ultracool dwarfs

ABSTRACT:

We propose to continue our nearly completed pilot project (a2471) and use the Arecibo telescope with its C-band receiver and the Mock spectrometer to conduct a survey of ultracool dwarfs in search for a burst component of radio emission from these objects. The design of our search has been guided by the unexpected detection of gigahertz radio emission from several ultracool dwarfs, including our own recent first detection of polarized bursts from a T7 brown dwarf, J1047+21. The objectives of this project are to increase the number of detections of ultracool dwarfs to explore the mechanism of both the magnetic field and the radio emission generation in these objects. We are particularly excited about a possibility to explore the brown dwarf - massive planet boundary using magnetic fields as a diagnostic tool. A possibility to probe magnetic fields of the coolest, lowest-mass dwarfs may shed new light on the much debated transition from brown dwarfs to planets, the associated differences in structure, and the most proper way to distinguish between these two types of objects.

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Remote Observing Request

- Observer will travel to AO
- Remote Observing
- In Absentia (instructions to operator)

Instrument Setup

C

Atmospheric Observation Instruments:

Special Equipment or setup: Mock spectrometer

RFI Considerations

Frequency Ranges Planned

4350 - 5250