

SEARCHING FOR BROWN DWARFS AT LOW RADIO FREQUENCIES

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Abstract

The unexpected first detection of a radio flare from a brown dwarf has puzzled our understanding of magnetic field generation from Ultra Cool Dwarfs (UCDs). This emission does not follow the radio to X-ray relation seen in the Sun and other low-mass stars, implying a different mechanism for the formation of the magnetic field. Radio observations are important diagnostic tools to determine the magnetic field configuration and the nature of plasma-emitting regions around UCDs. Current theories are limited by detections at GHz frequencies, and therefore MHz observations can potentially create a broader theory for UCD emission. MHz emission is expected to be emitted in regions of lower magnetic field strengths and thus probe the plasma conditions there. I will discuss current efforts for the MHz detection of these objects. I will show results from the recently released TGSS ADR1 catalog at 150 MHz, as well as results from targeted observations with LOFAR in the range of 110–190 MHz. I will put these results in the context of our current understanding of UCD emission mechanisms.

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