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Radio Emission Due to a Possible Exoplanet Around WX UMa
IVEY DAVIS, University of New Mexico, HARISH VEDANTHAM[1], JOSEPH CALLINGHAM, TIMOTHY SHIMWELL[2], Netherlands Institute for Radio Astronomy — Jupiter is the brightest object in the sky below 40 MHz. The cutoff of its emission at 40 MHz, strong circular polarization, and temporal modulation of the emission helped astronomers characterize the emission as a result of electron cyclotron maser instability (ECMI). The relationship between the maximum emission frequency and magnetic field strength, distinct polarization, and large power output of ECMI has made meter-long wavelengths a promising regime to look for exoplanets, but attempts to detect exoplanets at these frequencies have so far been unsuccessful. Our research follows the Low-Frequency Array Two Metre Sky Survey of the sky from 120 to 168 MHz. The survey found sources with high circular polarization with optical counterparts, raising the possibility of having observed ECMI either from the star or from an undetected exoplanet around the star. We focus on one star from the survey, WX UMa, a magnetically active dwarf with a surface field strength of $\sim$7 kG. Spectral analysis of WX UMa shows a possible cutoff at $\sim$145 MHz, lower than the expected cutoff for WX UMas magnetic field strength. This property, along with the long duration and high circular polarization of the emission lead us to postulate that the emission is driven by an exoplanet around WX UMa.

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