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A Jansky VLA Survey of Low-Frequency Stellar Radio Bursts

Magnetically active M dwarfs produce luminous radio bursts with strong circular polarization, indicative of a coherent emission mechanism. The emission mechanism and phenomena responsible for these bursts are not yet well understood. I will present the results of a 58-hour survey of 5 nearby active M dwarfs with the VLA, which simultaneously observed three frequency bands to cover a subset of 224-482 MHz and 1-6 GHz. The frequency, luminosity, and duration of events peaks at 1-1.4 GHz, where these stars produce coherent bursts about 25% of the time, making M dwarfs a significant population for L band transient surveys. The high duty cycle of coherent emission from active M dwarfs, combined with the observed sense of circular polarization, requires an ongoing mechanism for electron acceleration in the stars' large-scale magnetic fields.