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# A Model-Independent Radio Telescope Search for Dark Matter in the S Band

*Thursday 30 March 2023 11:00 (15 minutes)*

Despite attempts to constrain the nature of dark matter over the last few decades, the parameter space has continuously broadened. We have designed a novel search technique for ultralight dark matter using the Breakthrough Listen public data release of Green Bank Telescope data that aims to match the broad theoretical scope with an equally broad model-independent strategy. The search concept depends only on the assumption of decay or annihilation of virialized dark matter to a quasi-monochromatic radio line, and additionally that the frequency and intensity of the line be consistent with most general properties expected of the phase space of our Milky Way halo. Specifically, the search selects for a line which exhibits a Doppler shift with position according to the solar motion through a static galactic halo, and similarly varies in intensity with position with respect to the galactic center [1]. After a development and testing stage performed on a narrow range in the L band, we have completed a full analysis of the S band.

1. Aya Keller, et al., Astrophysics Journal 927, 71 (2022).

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