

DMRadio-50L Experiment Status and Overview

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Axions are a well-motivated dark matter candidate, which currently have a wide open and accessible parameter space, with few constraints on their mass and coupling strength to photons. The DMRadio-50L experiment seeks to explore a wide portion of this axion parameter space (between 5 kHz - 5 MHz), taking advantage of lumped element high-Q resonators with optimal out-of-band sensitivity. DMRadio-50L will utilize a toroidal magnet with a field strength of 1 T with a sensitivity goal of at least $a_{\gamma\gamma} \sim 5 \times 10^{-15} \text{ GeV}^{-1}$ across the entire region of interest. At the same time, it will serve as a test bed for advanced quantum readout technologies. In this talk, we will present an overview of the current status of the DMRadio-50L experiment currently entering the construction phase at Stanford as well as current efforts to optimize the experiment design in order to reach the above science goals.

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