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## Science reach and electromagnetic modeling of DMRadio-m<sup>3</sup>

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The experiments in the DMRadio program are designed to search for low mass sub- $\mu$ eV axion dark matter using the coupling of axions to photons. Specifically, DMRadio- $m^3$  is designed to have sensitivity to KSVZ and DFSZ QCD axions in the 40-830 neV (10-200 MHz) range. A dc solenoidal magnetic field sources an axion current inside a coaxial pickup structure whose resonance frequency is tuned using lumped tuning elements. In this talk, we present the sensitivity of DMRadio- $m^3$ . The primary science goal of sensitivity to DFSZ axions across 30–200 MHz can be achieved with a  $3\sigma$  live scan time of 3.7 years. This is informed by extensive finite element electromagnetic modeling of the pickup structure of the system, which will also be presented.

## Submitted on behalf of a Collaboration?

Yes

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