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Probing QCD axion dark matter with DMRadio-m[31] ELIZABETH VAN ASSENDELFT, Stanford University, DMRADIO COLLABORATION — Dark Matter Radio Cubic Meter (DMRadio-m^3) is a next-generation axion detector which will achieve sensitivity to the QCD axion over more than 1.5 orders of magnitude in mass, from 20neV to 0.8μeV. This science range, corresponding to frequencies of 5-200 MHz, includes substantial coverage of the two benchmark QCD axion models (KSVZ and DFSZ). To achieve these results, the DMRadio-m^3 detector will have a volume of $\sim$1m^3, a magnetic field of $\sim$ 4T, and a resonator quality factor Q $\sim 10^6$. The large volume and high magnetic field required by this experiment generates unique challenges compared to previous DMRadio detectors. In this talk we will describe plans for the DMRadio-m^3 experiment with a focus on the pickup structure geometry. In particular, we will demonstrate that high quality factors for the resonator can be achieved with a physically large coaxial copper structure.

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