

Abstract Submitted
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First results from a microwave cavity axion search at 25 μeV :
Overview¹ BENJAMIN BRUBAKER, Yale University, ADMX-HF COLLABORATION — The axion is a well-motivated cold dark matter candidate first postulated to explain the absence of CP violation in strong interactions. Dark matter axions may be detected via their resonant conversion into photons in a high- Q microwave cavity permeated by a strong magnetic field. In this talk I will present an overview of a newly operational cavity detector at Yale, which is the first such detector to incorporate a dilution refrigerator and Josephson parametric amplifier and thereby approach quantum-limited noise performance. I will discuss the first results from this experiment, which has excluded axion models with two-photon coupling $g_{a\gamma\gamma} > 2 \times 10^{-14} \text{GeV}^{-1}$, a factor of $\simeq 2.3$ above the benchmark KSVZ model, over the mass range $23.55 \mu\text{eV} < m_a < 24.0 \mu\text{eV}$. These are the first limits within the axion model band in the 10 μeV mass decade.

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