Abstract Submitted
for the FWS19 Meeting of
The American Physical Society

A tunable multi-rod resonant cavity for HAYSTAC[1] MARIA SIMANOVSKAIA, University of California, Berkeley, HAYSTAC COLLABORATION — Haloscope at Yale Sensitive To Axion Cold Dark Matter (HAYSTAC) is a dark matter detector that looks for an axion-induced power excess spectrally coincident with the resonance of a microwave cavity immersed in a strong magnetic field. The current HAYSTAC cavity achieves frequency-tunability over the 3.6-5.8 GHz window by a single, off-center tuning rod. However, probing higher frequencies introduces unique challenges. In particular, smaller volumes, lower quality factors, and higher densities of intruder modes decrease sensitivity and increase operational complexity. Here, we present the design and initial testing results of a cavity using seven tuning rods for the 5.5-7.4 GHz range. This design will allow HAYSTAC to probe higher axion masses while maintaining axion sensitivity significantly greater than that of the standard design. -/a

[1]This work was supported under the auspices of the National Science Foundation under grant PHY1607242 and the Heising Simons Foundation under grant 2016044. MS gratefully acknowledges support from the Berkeley Fellowship and the National Science Foundation Graduate Research Fellowship Program under grant DGE1745016.

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Date submitted: 27 Sep 2019 Electronic form version 1.4