

Abstract Submitted
for the NWS18 Meeting of
The American Physical Society

Extending the ADMX QCD Dark-Matter Axion Search to Higher Masses¹ RAPHAEL CERVANTES, University of Washington, ADMX COLLABORATION — Axions are hypothetical particles that, if they exist, would solve both the strong CP problem and the dark matter problem. Axions in our local dark matter halo could be detected using an apparatus consisting of a resonant microwave cavity threaded by a strong magnetic field. The ADMX experiment has recently used this technique to search for axions in the few $\mu\text{eV}/c^2$ mass range. However, the ADMX search technique becomes increasingly challenging with increasing axion mass. This is because higher masses require smaller-diameter cavities, and a smaller cavity volume reduces the signal strength. Thus, there is interest in developing more sophisticated resonators to overcome this problem. We present the progress of the ADMX Orpheus prototype experiment. This uses a dielectric-loaded Fabry-Perot resonator to search for axion-like particles with masses approaching $100 \mu\text{eV}/c^2$.

¹Support was provided by the Heising Simons Foundation and the U.S. Department of Energy through Grants No. DE-SC0009723, No. DE-SC0010296, No. DE-FG02-96ER40956, No. DEAC52-07NA27344, and No. DE-C03-76SF00098.

Raphael Cervantes
University of Washington

Date submitted: 20 Apr 2018

Electronic form version 1.4