

Abstract Submitted
for the APR20 Meeting of
The American Physical Society

ADMX-Orpheus: A Dielectrically-Loaded Fabry-Perot Resonator to Search for Higher Mass Axions¹ RAPHAEL CERVANTES, University of Washington, ADMX COLLABORATION — 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 uses this technique to search for axions in the few micro-eV 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. The ADMX-Orpheus experiment uses a dielectric-loaded Fabry-Perot resonator to search for axions with masses approaching 100 micro-eV. We present progress on the cryogenic prototype.

¹This work was supported by the U.S. Department of Energy through Grants Nos. DE-SC0009723, DE-SC0010296, DE-SC0010280, DE-SC0010280, DE-FG02-97ER41029, DE-FG02-96ER40956, DE-AC52-07NA27344, and DE-C03-76SF00098. This presentation has been authored by Fermi Research Alliance, LLC under Contract No. DE-AC02-07CH11359 with the U.S. Department of Energy, Office of Science, Office of High Energy Physics. Additional support was provided by the Heising-Simons Foundation and by the LDRD offices of the Lawrence Livermore and Pacific Northwest National Laboratories.

Raphael Cervantes
University of Washington

Date submitted: 10 Jan 2020

Electronic form version 1.4