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ADMX-Orpheus: A Dielectrically-Loaded Fabry-Perot Resonator to Search for Higher-Mass Axions[1] RAPHAEL CERVANTES, University of Washington, ADMX COLLABORATION — The ADMX experiment is currently searching for axions in the dark matter halo using a microwave cavity immersed in a strong magnetic field. The ADMX haloscope operates between 600 MHz and 1 GHz to search for axions with masses of a few micro-eV. However, this method is challenging to implement at higher masses because the cavity would need to have a smaller volume, reducing the signal strength. Thus, there is interest in developing more exotic resonators to address this issue. The ADMX-Orpheus haloscope is an open Fabry-Perot resonator with periodically placed dielectrics. This configuration allows for higher-order modes to couple with the axion while keeping the volume large. ADMX-Orpheus is designed to operate between 15 GHz and 18 GHz to search for axion-like particles around 70 micro-eV. I will discuss the development and characterization of the Orpheus resonator and the ongoing preparations to search for axion-like particles.

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