

Abstract Submitted
for the APR15 Meeting of
The American Physical Society

ADMX Microwave Cavity R&D Status¹ IAN STERN, Univ of Florida - Gainesville, ADMX COLLABORATION — The Axion Dark Matter eXperiment (ADMX), a direct-detection axion search, has begun taking data with a redesigned system. Earlier phases conducted axion searches in the mass range of 1.9-3.5 μeV (460-850 MHz) setting upper limits below the theoretical KSVZ coupling strength of the axion to two photons. The current upgrades will allow ADMX to detect axions with even the most pessimistic (DFSZ) couplings in this frequency range. In order to expand the mass reach of the detector, ADMX is conducting extensive research and development of microwave cavities. Prototype development programs include photonic band-gaps, multi-vane cavities, partitioned cavities, in-phase coupled cavities, and superconducting hybrid cavities. Additional studies include techniques for mode detection and mode-crossing suppression, and strategic planning. The various projects are in different phases of analysis, fabrication, and/or testing. The current status and near term objectives will be presented.

¹Supported by DOE Grants DE-SC0010280, DE-FG02-96ER40956, DE-AC52-07NA27344, DE-AC03-76SF00098, NSF Grant 1067242, and the Livermore LDRD program.

Ian Stern
Univ of Florida - Gainesville

Date submitted: 09 Jan 2015

Electronic form version 1.4