

Abstract Submitted
for the APR15 Meeting of
The American Physical Society

The ADMX Sidecar cavity and receiver-chain¹ CHRISTIAN BOUTAN, University of Washington, ADMX COLLABORATION — The Axion Dark Matter eXperiment (ADMX) searches for dark-matter axions by looking for their resonant conversion to microwave photons in a strong magnetic field. If ADMX rules out axions in the 500MHz - 2GHz frequency range, new technologies and cavity geometries will need to be explored to find higher mass axions. ADMX Sidecar is a higher frequency pathfinder experiment that uses a miniature resonant cavity to search for axions in the 2 GHz - 10 GHz frequency range. The Sidecar cavity shares the magnetic field and cryogenics of the main experiment but the data pipeline and receiver-chain are new and independent of the existing infrastructure. Unlike the main experiment, which uses gear-boxes and fiberglass shafts to translate the motion of room temperature motors into the cryogenic space, piezoelectric motors are used to adjust the Sidecar tuning rod position and antenna depth. Here I discuss the design, construction and status of ADMX Sidecar.

¹Supported by DOE Grants DE-FG02-97ER41029, DE-FG02-96ER40956, DE-AC52-07NA27344, DE-AC03-76SF00098, NSF Grant 1067242, and the Livermore LDRD program.

Christian Boutan
University of Washington

Date submitted: 08 Jan 2015

Electronic form version 1.4