

Abstract Submitted
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Progress on the Axion Dark Matter eXperiment - High Frequency (ADMX-HF)¹ KARL VAN BIBBER, University of California Berkeley — The Axion Dark Matter eXperiment - High Frequency (ADMX-HF) is a microwave cavity experiment at Yale specifically designed to be both a pathfinder for first data in the 4-10 GHz (20-100 microelectronvolt) range, and an innovation test-bed for new concepts with promise to dramatically increase the sensitivity, mass range and scanning rate, with the aim to migrate technology developments to ADMX. Built around a 9T superconducting magnet (16.5 cm I.D. x 40 cm long) and dilution refrigerator, ADMX-HF will utilize Josephson Parametric Amplifiers (JPA) from the outset, and is projected to achieve sensitivity within the axion model band, despite its small volume. It will explore concepts such as hybrid superconducting cavities to improve the cavity Q by an order of magnitude, and operation in squeezed-state mode to reduce the amplifier noise temperature below the quantum limit. The experiment, a collaboration of Yale, UC Berkeley, JILA/Colorado and LLNL is in final stages of integration and nearing commissioning phase.

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Karl van Bibber
University of California Berkeley

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