

Abstract Submitted  
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**Measurements of the Electric Field in a Resonant Microwave Cavity for Dark Matter Axion Searches**<sup>1</sup> JABEN ROOT, Univ of California - Berkeley, ADMX COLLABORATION<sup>2</sup>, ADMX HF COLLABORATION<sup>3</sup>, BLAST TEAM<sup>4</sup> — The Axion Dark Matter Experiment at High Frequency (ADMX HF) is an experiment in search for the Axion, a highly motivated dark matter candidate. The Axion can be measured by looking for its conversion to detectable microwave photons in a resonant microwave cavity that is in the presence of a large magnetic field. The power generated from axion-photon conversions in the cavity is a function of the electric field structure of the particular mode that the cavity is tuned to. Here I will present on techniques to directly measure the electric field of a microwave cavity by perturbing it with a small dielectric bead (also known as a “bead-pull” measurement) and comparing it with the natural resonant frequency. These results can be compared directly to expected field patterns from simulation. I also will present on plans for future measurements of cavities with tuning rods to measure mode localizations near the TM<sub>010</sub> and higher order modes.

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<sup>2</sup>Axion Dark Matter Experiment

<sup>3</sup>Axion Dark Matter Experiment High frequency

<sup>4</sup>Berkeley Livermore Axion Search Team

Jaben Root  
Univ of California - Berkeley

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