

# Examination of Resonant Modes in Microwave Cavities

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The Axion Dark Matter eXperiment (ADMX) looks to detect dark matter axion particles by using microwave cavities in a high magnetic field to convert the axion's mass energy to a detectable photon. The photon frequency corresponds to the axion mass. Tuning elements in the cavities allow the resonant frequency to be changed but only certain modes couple to the axion. Interactions with additional resonant modes that do not couple to the axion cause unobservable regions in the frequency range. This research investigated new methods to move the additional resonant modes in order to observe these regions.