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**A microwave cavity search for axions<sup>1</sup>**

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The mass of the axion, a hypothetical elementary particle proposed as a solution to the “strong-CP” problem, is constrained by experimental and astrophysical considerations to a range where the axion is a very plausible cold dark matter candidate. This weakly-interacting dark matter particle could constitute the halo of our galaxy. In the Axion Dark Matter eXperiment (ADMX), halo axions flow through a microwave resonant cavity permeated by a static magnetic field, where some convert into microwave photons. These photons are detected by an ultralow-noise receiver. The ADMX Collaboration has set limits on the axion-to-photon coupling and/or local axion halo mass density for axion mass between 1.9 and 3.3  $\mu\text{eV}$ . Consideration of phase-space structure of the axion flow, which predicts extremely sharp peaks in the axion kinetic-energy spectrum, improves the limit. Presently underway is an upgrade to the experiment, using SQUID RF amplifiers, which will improve the performance by more than a factor of 10.

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