

MADMAX A Dielectric Haloscope Experiment

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The MAGnetized Disc and Mirror Axion eXperiment, MADMAX, is based on a dielectric haloscope aimed at μeV axion masses. This haloscope significantly boosts the weak axion signal by controlling the interference conditions via a mirror and dielectric discs (booster) that can be reconfigured to scan a broad mass range. During the latest dark matter search of MADMAX, measurements were taken with a new booster system with a diameter of 200 mm inside the CERN's Morpurgo magnet. We successfully tuned and reconfigured the experiment to stably operate across a frequency range of roughly 100 MHz. Using a newly developed glass-fiber-based cryostat and a 100 mm version of our booster detector, MADMAX performed a dark matter search in a 1.6 T magnetic field under cryogenic conditions for the first time. Here, we present preliminary results from these measurements.

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