

## Advances in searching for galactic axions with a Dielectric Haloscope (MADMAX)

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Axions are hypothetical particles that could explain the observed dark matter density and simultaneously, they can naturally resolve the strong CP problem in QCD. Recent theoretical works indicate that axions are expected to have masses in the range of 40-400  $\mu\text{eV}$ , a range that presently still evades experimental sensitivity.

We present a new experimental design to search for QCD axions in this mass range via the MAgnetised Disk and Mirror Axion eXperiment (MADMAX). MADMAX will be composed of multiple movable dielectric disks and a mirror that are placed inside a strong magnetic field to utilize the axion-induced coherent electromagnetic wave emissions from each disc surface.

In this contribution, the basic concept of MADMAX will be introduced and laboratory-based setups investigating the feasibility of the experiment will be shown. First measurements from a small down-scaled dielectric haloscope performed inside the MORPUGO magnet at CERN will be discussed.

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