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MADMAX - Towards a Dielectric Axion Haloscope

Friday, 8 July 2022 12:45 (15 minutes)

The MAGnetized Disc And Mirror Axion eXperiment (MADMAX) intends to search for dark matter axions in the mass range of 40 to 400 μeV , a range previously inaccessible by other experiments. This mass range is favored by models in which the Peccei-Quinn symmetry is broken after cosmic inflation. MADMAX will apply the concept of the dielectric haloscope, multiple movable dielectric disks in a strong magnetic field. The experiment will be located at DESY Hamburg and is currently entering its prototype phase.

In this presentation, the concept of MADMAX will be presented, both in respect to the simulated sensitivity of the experiment as well as laboratory based setups demonstrating the feasibility of the experiment. Results from a small scale closed system will be presented, showing good agreement between simulation and measurements. Also the advanced design of the planned prototype of the experiment will be discussed.

In-person participation

Yes

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