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Direct detection of Axion dark matter with MADMAX

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Dark matter is one of the major puzzles in fundamental physics. Axions are among the best-motivated dark matter candidates. MADMAX experiment will search for axions in the mass range around $100 \mu\text{eV}$, which is favored by theory. Traditional axion cavity experiments are unable to access this mass range. Therefore, a novel detector called dielectric haloscope will be utilised for this experiment.

The MADMAX experiment is in an R&D phase to validate the experimental approaches to be used for the final detector. There are several prototypes to validate different aspects like mechanics, piezo motors, RF behaviour, and physics studies. I'll present the current status of my work in the simulation, data analysis, and tests of various prototypes.

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