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The Electric Tiger Experiment: a Proof-of-Concept for the Periodic Dielectric Loaded Resonator

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The Electric Tiger experiment is a resonant cavity for the detection of axions in the 4-5 GHz range. The cavity uses a first-of-its-kind detection method – dielectric media placed at regularly spaced intervals within the cavity. Such a search method allows for the construction of a simple tuning mechanism and a wide range of frequencies that can be searched with a single cavity. The tuning and mode identifications/tracking techniques developed by this experiment are translatable to open resonator axion searches that are suitable for very high frequency ranges (> 10 GHz).

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