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# Heterodyne Detection of Axion Dark Matter in an RF Cavity

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I will present a recently proposed approach to detect photon-coupled dark matter axions in an RF cavity. The approach relies on axion-mediated transitions between nearly-degenerate resonant modes, leading to parametrically enhanced signal power for light axions. We will discuss how a resonant signal is generated, and how it compares with traditional haloscope searches. We will also discuss noise sources. This approach could probe axion masses across fifteen orders of magnitude, all in a metre-scale cavity.
Time permitting, I will comment on the parallels between axion and gravitational wave detection.

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