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The Axion Plasma Haloscope

Monday, 18 July 2022 20:00 (20 minutes)

We summarize the recent progress of the ALPHA Consortium, a new experimental collaboration to build a plasma haloscope to search for axions and dark photons. The plasma haloscope is a novel method for the detection of the resonant conversion of light dark matter to photons. Unlike traditional cavity haloscopes, which are generally limited in volume by the Compton wavelength of the axion, plasma haloscopes use a wire metamaterial to create a tuneable plasma frequency. This decouples the wavelength of light from the Compton wavelength and allows for much larger conversion volumes. We outline a baseline design for ALPHA and a potential experimental setup and show that it would lead to competitive sensitivity for well-motivated high mass axions.

In-person or Virtual?

In-person

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