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ALPHA: The Axion Longitudinal Plasma HALoscope Consortium

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In 2019 we introduced a new strategy to search for dark matter axions using tunable cryogenic plasmas. Unlike current experiments, which repair the mismatch between axion and photon masses by breaking translational invariance (cavity and dielectric haloscopes), a plasma haloscope enables resonant conversion by matching the axion mass to a plasma frequency. A key advantage is that the plasma frequency is unrelated to the physical size of the device, allowing large conversion volumes. We here summarize our progress towards realizing this detection scheme, and introduce a global consortium of researchers working towards making the plasma haloscope a reality.

Speaker

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