

Multiple-cell cavity for high mass axion dark matter search

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Haloscope axion dark matter search experiments typically consider arrays of multiple cavities to increase the detection volume in exploring high mass regions. We, IBS/CAPP at KAIST, introduce a new concept, dubbed pizza-cylinder cavity, which is superior to conventional multiple-cavity design in terms of detection volume, simplicity of the experimental setup, and facilitation of the phase-matching mechanism. This idea is promising for detecting high frequency axion dark matter with enhanced experimental sensitivities. We present the characteristics of this design and demonstrate the experimental feasibility using a double-cell cavity.

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