

Abstract Submitted
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Multiple-cell cavity for axion dark matter search SAEBYEOK

AHN, JUNU JEONG, Department of Physics, Korea Advanced Institute of Science and Technology (KAIST), Daejeon 34141, Republic of Korea, SUNGWOO YOUN, YANNIS SEMERTZIDIS, Center for Axion and Precision Physics Research, Institute for Basic Science, Daejeon 34047, Republic of Korea — Cavity-based axion dark matter experiments utilize multiple-cavity detectors, consisting of an array of identical cavities, to explore high mass regions. We introduce a new design of a pizza-cylinder type detector, characterized by multiple cells evenly divided by partitions and a narrow hollow gap in the middle of a cavity. This concept is superior to the conventional multiple-cavity design in terms of detection volume, experimental setup, and phase-matching mechanism. We present various simulation studies and an experimental demonstration to verify that this design is promising for searching for high mass axions.

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