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Multiple-cavity detector for axion dark matter search JUNU JEONG, SAEBYEOK AHN, Department of Physics, KAIST , SUNGWOO YOUN, YANNIS SEMERTZIDIS, CAPP, Institute of Basic Science — Exploring higher frequency regions in axion dark matter searches using microwave cavity detectors requires a smaller size of the cavity as the TM₀₁₀ frequency scales inversely with the cavity radius. One of the intuitive ways to make a maximal use of a given magnet volume, and thereby to increase the experimental sensitivity, is to bundle multiple cavities together and combine their individual outputs ensuring phase-matching of the coherent axion signal. The Experiment of Axion Search aT CAPP (EAST-C) is a dedicated project to develop multiple-cavity systems at the Centre for Axion and Precision Physics Research (CAPP) of the Institute for Basic Science (IBS). In this poster, the conceptual design of the phase-matching mechanism and experimental feasibility using a quadruple-cavity system will be presented.

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