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Improving axion dark matter search at IBS/CAPP in Korea[1]
OHJOON KWON, WOOHYUN CHUNG, Institute for Basic Science, DOYU LEE, JINSU KIM, DANHO AHN, Korea Advanced Institute of Science and Technology, ANDREI MATLASHOV, Institute for Basic Science, YANNIS SEMERTZIDIS[2], Korea Advanced Institute of Science and Technology, CENTER FOR AXION AND PRECISION PHYSICS RESEARCH COLLABORATION — The axion is an excellent dark matter candidate motivated by the Peccei-Quinn solution to the strong-CP problem. The IBS Center for Axion and Precision Physics Research (CAPP) in Korea will search for the dark matter axion using a method called "haloscope", converting axions into microwave photons in a resonant cavity permeated by a strong magnetic field. The initial stage of building CAPP's flagship axion experiment, CULTASK (CAPP's Ultra Low Temperature Axion Search in Korea), is complete with powerful dilution refrigerators, superconducting magnets, frequency tuning systems, RF receiver electronics and ready to take high quality physics data. CAPP is also conducting extensive R&D studies to improve the sensitivity of the experiment, which include the research on more powerful superconducting magnets, high-Q factor cavities and the effort to utilize quantum amplifiers in the RF receiver chain. I will present the status of CULTASK and our future plans to improve through the progress of R&D projects.

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