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Launching Axion Experiment at CAPP/IBS in Korea

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The main research focus of the Center for Axion and Precision Physics Research (CAPP) at IBS is to establish a state-of-the-art axion experiment in Korea and to search for relic axion particles converting to microwave photons in a resonant cavity submerged in a strong magnetic field. The initial stage of building our axion experiment, CULTASK (CAPP Ultra Low Temperature Axion Search in Korea) is completed at KAIST (Korea Advanced Institute for Science and Technology) Munji Campus with successful installation of two new dilution refrigerators (one with 8T superconducting magnet) which could lower the temperature of cavities to less than 50 mK. A resonant cavity (10 cm OD) and the support structure were fabricated and installed with the frequency tuning system employing a sapphire rod driven by a piezoelectric actuator. The RF measurements were also performed for evaluating and improving noise figures using cryogenic HEMT amplifiers. I will discuss the status and progress of CULTASK, soon to be complete with a DAQ and monitoring system, and future plans. I will also present the recent results from the development of high Q-factor, ultra pure Cu and Al cavities under high magnetic fields, utilizing the two refrigerators.

Primary author: Dr CHUNG, Woohyun (CAPP/IBS)

Presenter: Dr CHUNG, Woohyun (CAPP/IBS)