



Contribution ID: 27

Type: **not specified**

Search for KSVZ axion dark matter around $24.5 \mu\text{eV}$

Monday, 3 July 2023 11:55 (20 minutes)

The axion is a well-motivated hypothetical particle resulting from the Peccei-Quinn mechanism, which is an elegant solution to the strong CP problem of quantum chromodynamics. Because of its hypothetical abundance and weak coupling, it is also considered a promising candidate for dark matter, another big mystery of the universe. The Center for Axion and Precision Physics Research (CAPP) of the Institute for Basic Science (IBS) is searching for axions in various mass ranges using several experimental configurations based on the axion haloscope. This talk presents one of the experiments conducted in IBS-CAPP that focuses on the mass around $24.5 \mu\text{eV}$ at the Kim-Shifman-Vainshtein-Zakharov (KSVZ) sensitivity. The experiment employs an 8-cell microwave resonant cavity to maximally utilize a given volume, and a flux-driven Josephson parametric amplifier to achieve a low system noise temperature. In this talk, the first data from the experiment that scanned 100 MHz at near KSVZ sensitivity is presented. The current status and prospects are also discussed.

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Session Classification: Monday Session 2