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CAPP's first axion dark matter data and R&D projects

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A couple of years after the first installation of dilution refrigerators, IBS/CAPP has launched a pilot axion cavity experiment, CAPP-PACE, equipped with an 8 T superconducting magnet with 12 cm inner bore to search for microwave axions with a mass around 10 μeV. The experiment utilized a high Q-factor cavity with a piezoelectric frequency tuning system. The total system noise temperature was measured to be between 1 and 1.5 K. The axion dark matter physics data were taken during 2018, scanning frequencies about 250 MHz and then 1 MHz with 10*KSVZ and KSVZ sensitivity, respectively. Now the main focus of our research at this stage is on developing quantum noise-limited amplifiers and superconducting cavities. We present the results from the CAPP's first physics data in the axion mass range around 10 μeV and the progress of R&D projects.

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