

Searches for axion dark matter at IBS-CAPP

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Axions have been considered the most favored solution to both the strong-CP problem and the dark matter mystery. Many experimental searches that rely on the axion-photon conversion under a strong magnetic field utilize the haloscope technique that is sensitive in the microwave region. We, the Center for Axion and Precision Physics Research (CAPP) of the Institute for Basic Science (IBS), have recently reached the theoretically interesting regions in various mass ranges. In particular, an experiment with a 12T superconducting magnet, a high-cooling power dilution refrigerator, and quantum-noise-limited devices enabled us to achieve unprecedented experimental sensitivities, exploring the DFSZ axion model above 1 GHz. We are also developing state-of-the-art technologies in a variety of areas to enhance performance to investigate the axion physics over a wider frequency range. In this talk, we present the current status of axion search experiments and R&D activities at IBS-CAPP, and discuss the future prospects.

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