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Haloscope searches for axion dark matter with CAPP

Significant experimental efforts to search for QCD axions have been made at the Center for Axion and Precision Physics Research (CAPP) in order to address the fundamental questions in physics: the strong CP problem and the dark matter mystery. The Center has established a world-class facility dedicated for cavity haloscope searches relying on the axion-photon coupling. By leveraging powerful equipment such as high-field superconducting magnets and high-performance refrigerators, as well as sensitive quantum devices such as a series of Josephson parametric amplifiers, CAPP has begun to explore the theoretically interesting territory represented by the KSVZ and DFSZ models. CAPP has also developed state-of-the-art technologies in various areas to enhance experimental performance over wider frequency ranges. In this presentation, the recent search results and several novel R&D developments are highlighted and future plans are discussed.

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