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CAPP-8TB: Search for Axion Dark Matter in a Mass Range of 6.62 to 7.04 μeV

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The axion is a hypothetical particle proposed to solve the strong CP problem, and also a candidate for dark matter. Galactic halo axions which are non-relativistic can be converted into photons under a strong magnetic field and detected with a microwave resonant cavity. Since P. Sikivie had proposed this experimental method, many experiments have excluded some mass regions with certain sensitivities in terms of axion-photon coupling ($g_{a\gamma\gamma}$) for decades, but no axion dark matter has been discovered to date. CAPP-8TB is yet another axion haloscope experiment at IBS/CAPP designed to search for the axion in a mass range of 6.62 to 7.04 μeV . The experiment aims for the most sensitive axion dark matter search in this particular mass range with its first-phase sensitivity reaching the QCD axion band. In this presentation, we discuss the overview of the experiment, and present the first result. We also discuss an upgrade of the experiment to achieve higher sensitivity.

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