

Axion dark matter search experiment with 18T high temperature superconducting magnet at CAPP/IBS in KAIST

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The axion is a hypothetical particle that was introduced to solve the strong CP problem. The U(1) Peccei-Quinn symmetry is spontaneously broken and dynamically produce a slowly oscillating particle axion field. The axion is also a strong candidate for dark matter. In order to search for the axionic dark matter, we use a haloscope technology which is equipped with a strong solenoid magnet and a frequency-tuned resonant cavity system. Our detector is designed to be sensitive to the axion mass range of 14.88-26.88 μeV (3.7-6.5 GHz). In this presentation, we report the CAPP18T axion dark matter search experiment setup which utilizes a 18T High Temperature Superconducting solenoid magnet, resonant cavity, dilution refrigerator and linear amplifier system.

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