

Search for the axion dark matter in the mass range of 6.62–6.82 μeV

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The axion is a hypothetical particle associated with the spontaneous symmetry breaking of the U(1) symmetry, proposed by Pecci and Quinn to resolve the Charge-Parity problem in quantum chromodynamics. For invisible axions, cosmological and astrophysical observations impose the lower and upper limits on axion mass of μeV and meV respectively. The axion in such mass range could be a promising candidate for cold dark matter. CAPP-8TB haloscope searches for axion by detecting photons, produced by the axion-photon coupling, resonating in a microwave cavity. CAPP-8TB has recently obtained a result of axion search in the mass range of 6.62–6.82 μeV . At the 90% confidence level the experiment probed the QCD axion down to the theoretical boundary, which is the most sensitive experimental result in the specific mass range to date. In this presentation I will explain the detail of the experimental setup, parameters and analysis procedure. A plan for the next phase of the experiment for different mass ranges will also be discussed.

I read the instructions

Secondary track (number)

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