

# Search for the axion dark matter in the mass range of 6.62–6.82 $\mu\text{eV}$

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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  $\mu\text{eV}$  and  $\text{meV}$  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  $\mu\text{eV}$ . 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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