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First axion dark matter search with toroidal geometry

We, the Institute for Basic Science Center for Axion and Precision Physics Research report the first axion dark matter search with toroidal geometry.
A toroidal geometry can provide several advantages, which are a larger volume for a given space and greatly reduced fringe fields which interfere with quantum noise limited superconducting amplifiers.
In this pioneering search, we exclude the axion-photon coupling $g_{a\gamma\gamma}$ down to about 5×10^{-8} GeV^{-1} over the axion mass range from 24.7 to 29.1 μeV at the 90% confidence level.
Prospects for axion dark matter searches with larger scale toroidal geometry are also given.

Experimental Collaboration

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