

Abstract Submitted
for the DAMOP19 Meeting of
The American Physical Society

Searching for axion-like dark matter in lab-scale experiments

ALEXANDER SUSHKOV, DENIZ AYBAS, ALEXANDER GRAMOLIN, JANOS ADAM, DORIAN JOHNSON, Boston University — The nature of dark matter is one of the most important open problems in modern physics. Axions, originally introduced to resolve the strong CP problem in quantum chromodynamics (QCD), and axion-like particles (ALPs) are strongly motivated dark matter candidates. I will report on two experimental searches for ultralight axion-like dark matter: a broadband search for interaction with the electromagnetic field using a magnetic material, and a magnetic resonance-based search for interaction with nuclear spins. In both cases we use precision magnetic field sensing in highly-shielded electromagnetic environment.

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Date submitted: 04 Feb 2019

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