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Towards axion searches with polarized hadron beams at GSI/FAIR

Tuesday, June 3, 2025 4:00 PM (2 hours)

Axions, originally introduced to solve the strong CP problem, are leading dark matter candidates appearing in various Standard Model extensions. At low masses, axion-like particle (ALP) dark matter behaves as a classical field, potentially detectable when its frequency resonates with a beam's spin-precession frequency. The JEDI collaboration's proof-of-principle experiment at COSY set upper limits on oscillating EDMs caused by ALPs, though no signals were observed. This presentation discusses COSY results and recent efforts to explore the feasibility of conducting axion search experiments using existing accelerators at GSI/FAIR with polarized hadron beams.

Footnotes

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