

DPF-PHENO 2024

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MagLev for Dark Matter

Tuesday 14 May 2024 14:00 (15 minutes)

This study demonstrates how magnetically levitated (MagLeV) superconductors can detect dark-photon and axion dark matter via electromagnetic interactions, focusing on the underexplored low-frequency range below a kHz. Unlike traditional sensors that primarily detect inertial forces, Maglev systems are sensitive to electromagnetic forces, enabling them to respond to oscillating magnetic fields induced by dark matter. The research highlights the superconductors' capacity to probe dark matter when its Compton frequency matches the superconductor's trapping frequency and details the adjustments necessary for detection. This approach could significantly enhance sensitivity in the Hz to kHz frequency range for dark matter detection.

Mini Symposia (Invited Talks Only)

Plenary (Invited talks only)

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