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Scientific Prospects and Technical Innovations in the CDEX-50 Experiment

Tuesday 26 August 2025 15:00 (20 minutes)

The CDEX program has been pursuing the direct detection of light dark matter candidates using an array of germanium detectors at the China Jinping underground laboratory, deepest operating underground facility in Sichuan, China. Recent investigations have explored the modulation effects of light WIMPs, WIMP-nucleus interactions via the Migdal effect, dark photon models, solar axions, axion-like particles, and new mechanics dark matter candidates. An upgraded CDEX-50 dark matter experiment is proposed and in progress, accompanied by R&D initiatives on crucial low radioactivity technologies, including electroformed copper at the underground site, the fabrication of ultra-low-background front-ends for various germanium detector types, and the operation of a germanium detector with its bare crystal immersed in liquid nitrogen with radon mitigation. Additionally, potential hybrid Anti-Compton detectors and a ~1700 cubic meter liquid nitrogen tank are being explored. The results and future prospects of the CDEX dark matter program will be presented.

Collaboration you are representing

CDEX

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Session Classification: Dark Matter and Its Detection

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