PARTICLE PHYSICS SEMINAR

LEVERAGING QUANTUM SENSORS TO SHINE NEW LIGHT ON SEARCHES FOR LOW-MASS DARK MATTER

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Fermilab

Mon
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3:30PM

MCP 201

Michelson Center for Physics
933 E 56th Street

While dark matter accounts for approximately 85% of the mass in the universe, its physical nature remains one of the most pressing open questions in the field of physics. Three decades of experiments have been searching for dark matter interactions over a wide range of candidate dark matter masses and all have come up empty-handed. Nevertheless, there remain large swaths of unexplored, well-motivated particle dark matter models that are currently inaccessible through existing detector technologies. One path to probe these remaining particle dark matter models is through the use of low-threshold quantum sensors. In this talk, I will review the landscape of dark matter direct detection, outline the potential role of quantum sensors in particle detection, and detail the early results from a calibration system critical to realizing these individual devices as fully-fledged experiments.

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