APR21-2021-020154

Abstract for an Invited Paper
for the APR21 Meeting of
the American Physical Society

Quantum Sensors for Particle Physics

REINA MARUYAMA, Yale University

Quantum Sensors leverage quantum phenomena to make measurements by manipulating quantum states, entanglement, and superposition. Many in the particle physics community are exploring the potential for how the applications of quantum technologies will advance our understanding of fundamental physics questions such as measurements of the cosmic microwave background, dark matter direct detection, dark energy, axions, permanent electric dipole moments, and other symmetry violation searches. Technological advances in the measurements of electromagnetic fields, nuclear magnetic resonance, transition edge sensors, SQUIDS, superfluid helium, and other technologies from AMO communities are being explored, leading to a truly multi-disciplinary exploration of technical capabilities. In this talk, I will summarize the status of the field and efforts currently underway.