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Quantum measurement systems and applications to particle physics and cosmology

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Recent progress in quantum measurement systems is remarkable. There are new proposals and R&D that utilize quantum enhancements not adopted before. Examples include superconducting quantum sensors, atom interferometry, quantum spin sensors, etc. They are mainly motivated by industrial applications toward secure communications systems, quantum computing, and highly sensitive sensors. Given the excellent potential of the new quantum measurement systems, there are also new proposals to use them for particle physics and cosmology.

In this review, I will survey currently available and emerging technologies and their applications to explain where we stand. I will then discuss future directions and new proposals for particle physics and cosmology.

Primary experiment

Presenter: HAZUMI, Masashi (KEK) Session Classification: Plenary Quantum