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【428】 Towards the first demonstration of quantum gravitational states of atoms with a cryogenic hydrogen beam

Wednesday, 1 September 2021 16:00 (15 minutes)

We are building a cryogenic hydrogen (H) beam and pulsed ultraviolet laser detection system for the first demonstration of Quantum Gravitational States (QGS) of atoms. The enhanced statistics available through use of hydrogen atoms versus ultracold neutrons will increase sensitivity to short-range forces predicted in extensions of the Standard Model that would alter these states. Additionally, measuring hydrogen QGS will serve as a benchmark demonstration for measuring gravitational properties of anti-H, and trapping of H or anti-H using QGS methods. This talk will detail progress on building and characterizing the velocity distribution of our cryogenic hydrogen beam.

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