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## Test of Gravitation with Quantum Objects

*Wednesday, 13 October 2010 17:00 (20 minutes)*

This talk is about a test of gravitation at small distances by quantum interference deep into the theoretically interesting regime of 10000 times gravity. The method allows a precise measurement of quantum mechanical phase shifts of a Schrödinger wave packet bouncing off a hard surface in the gravitational field of the earth. The experiment is sensitive to gravity-like forces at a length scale below 10  $\mu\text{m}$ . Such forces can be mediated from gauge bosons propagating in a higher dimensional space and this experiment can therefore test speculations on large extra dimensions of sub-millimetre size of space-time or the origin of the cosmological constant in the universe, where effects are predicted in the interesting range of this experiment and might give a signal in an improved setup.

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