

## EINLADUNG

zum Vortrag von

**Univ.Prof. Dr. Hartmut Abele**  
Atominstitut, Technische Universität Wien

# Test of Gravitation with Quantum Objects

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**Dienstag, 22. Juni 2010, um 17.00 Uhr**

Ort: Lise-Meitner-Hörsaal, Fakultät für Physik, Universität Wien,  
1090 Wien, Strudlhofgasse 4 / Boltzmannngasse 5, 1. Stock

*Barrierefreier Zugang: Boltzmannngasse 5, Lift, 1. Stock rechts über den Gang zum Hintereingang des Hörsaals*

### Abstract:

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  $\mu\text{m}$ , where we already place limits. 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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Vorsitzender 2009/10: Ao.Univ.Prof. Dr. Wilfried Schranz, Physik Funktioneller Materialien, Universität Wien