Gravity resonance spectroscopy and the dark sector

Hartmut Abele

TU Wien, Stadionallee, Wien, Austria

This talk focuses on the control and understanding of a gravitationally interacting elementary quantum system using the techniques of resonance spectroscopy. It offers a new way of looking at gravitation at short distances based on quantum interference. The ultra-cold neutron reflects from a mirror in well-defined quantum states in the gravity potential of the earth allowing the application of gravity resonance spectroscopy (GRS). GRS relies on frequency measurements, which provide a spectacular sensitivity. An acoustic Ramsey setup, currently under development, will set new standards in precision for the experiment qBOUNCE in many respects.