SFB/TRR 21 - Colloquium

7. Februar 2014, Ulm

Daniel Braun
(Institut für Theoretische Physik, Universität Tübingen)

Quantum Enhanced Measurements - debunking some myths

One of the most exciting perspectives of how quantum information science may pay back to physics, is the use of quantum mechanical effects for enhancing the sensitivity with which certain classical parameters can be measured. Examples include gravitational wave detection, measurement of small magnetic fields, improved time and distance measurements, up to better measurements of temperature. It is has become common folklore in the field that for these tasks highly entangled states are necessary which, however, are in general also very prone to decoherence. In this talk I explore different avenues out of the dilemma, including the use of identical particles, phase transitions, and interaction based schemes, all the way to a recently introduced "coherent averaging scheme" that even has a classical analogue and might lead to progress in the long-standing and embarrassing situation of our lack of knowledge of the gravitational constant.

7. Februar 2014, 15:30 Uhr

Universität Ulm, Raum N25/H9
Albert-Einstein-Allee 11, 89081 Ulm

CO.CO.MAT