UNIKASSEL VERSITÄT

Physikalisches Kolloquium

Thursday, 02.02.2017, 17:15, HS 100
Reception with coffee & cookies 16:45

Prof. Dr. Stephan Schiller, Heinrich-Heine-Universität, Düsseldorf:

Frequency Metrology under extreme Conditions: Ultracold Atoms in Space and ultracold Crystals

Abstract
Measurements of time intervals and frequencies are arguably the most fundamental measurement types in Physics and Technology. For a long time already, these quantities have been the ones most precisely measurable. Nevertheless, the last decade has seen a further strong development of time/frequency metrology techniques, with a further nearly 100-fold improvement in the precision. So far the applications of these techniques have mostly been confined to specialized national metrology laboratories. There are great opportunities if these very advanced techniques can be applied outside such laboratories, even in the field. In this talk we present two activities aimed in this direction: optical atomic clocks for operation on the ISS, and cryogenic crystalline resonators. The utility of these tools for fundamental physics (tests of Relativity) and for applied physics (navigation, geophysics) will be discussed.

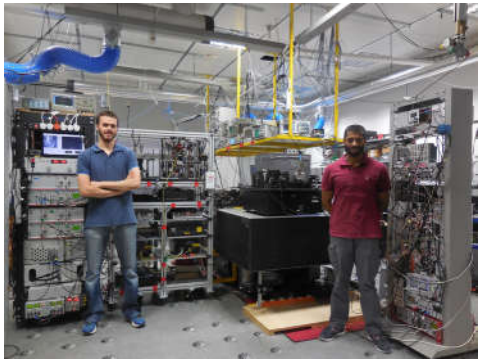

Photo: The breadboard optical atomic clock that serves as a demonstrator of the future clock for the mission ISOC on the ISS. S.Origlia et al., Proc. SPIE 9900, 990003 (2016); http://arxiv.org/abs/1603.0606

All of you interested in physics are cordially invited!

Contact: Dr. Guido Fuchs, More Information: uni-kassel.de/go/physikalisches_kolloquium