

Theoriekolloquium

Am **29. Oktober 2015** um **14.15 Uhr** in **W2 1-143** hält

Herr Dr. Christoph Weiß (Durham)

einen Vortrag mit dem Titel

Attractive Bose gases: From quantum reflection to quantum-enhanced interferometry

In a recent experiment at Durham University with attractively interacting bosons, we observed quantum reflection off an attractive barrier. The talk will start with modelling these results numerically. Attractively interacting Bosons in quasi-one-dimensional waveguides form weakly bound molecules, bright solitons and references therein. Bright solitons were discovered more than 160 years ago in a water channel: a water wave did not change its shape for many kilometres. Ultracold atoms with pairwise attractive interactions allow the creation of micro-versions of these bright solitons. These quantum bright solitons provide an ideal system to study quantum effects in the realm between macroscopic world our physical intuition is based on and the microscopic world of single atoms. The talk will show how many-particle quantum superpositions (Schrödinger-cat states) generated from quantum bright solitons can be used for quantum-enhanced interferometry. While decoherence would destroy such quantum superpositions, it can also lead to new physics.

Interessierte sind herzlich eingeladen.

gez. Prof. Dr. Martin Holthaus