

---

**GR 7: Hauptvorträge Mittwoch**

Zeit: Mittwoch 8:30–10:00

Raum: KGI-HS 1010

**Hauptvortrag** GR 7.1 Mi 8:30 KGI-HS 1010  
**Experiments with cold atoms for gravitational physics** —  
•HANSJÖRG DITTUS — ZARM, Universität Bremen, Am Fallturm,  
28359 Bremen

Promising techniques for future gravitational physics experiments are matter-wave sensors based on cold atoms or atom lasers using atoms as low-noise microscopic test masses (wave packets) in order to measure inertial forces. In particular, weightlessness conditions allow attaining lower temperature regimes and longer evolution times. During drop tower or satellite experiments with ultra-cold quantum matter, like Bose-Einstein Condensates, the extension of an undisturbed free fall is possible and enable future quantum tests of the equivalence principle as well as experiments to verify possible effects induced by quantum gravity. I will report on recent experiments with Bose-Einstein Con-

densates in free fall at Drop Tower Bremen within the QUANTUS collaboration and on new activities to realize precision experiments for gravitational physics with atom sensors.

**Hauptvortrag** GR 7.2 Mi 9:15 KGI-HS 1010  
**Compact Stars as Sources for Gravitational Waves** — •KOSTAS  
KOKKOTAS — Theoretische Astrophysik, Universität Tübingen

We will present the most recent results concerning the dynamics of neutron stars and their relation to the emission of gravitational waves. Special emphasis will be given to: 1) recent non-linear studies of vibrating neutron stars, 2) the studies related to the differential rotation of neutron stars and 3) the present understanding of the magnetar dynamics.