

Announcement

Ultracold Quantum Gases

Prof. Dr. Johannes Hecker Denschlag, Dr. Wolfgang Limmer, Dr. Tobias Kampschulte

Description

The young field of ultracold quantum gases is an exciting, fast-growing field of research. In recent years, technologies have been developed to cool atoms and molecules to the lowest temperatures and to manipulate and control their degrees of freedom at the quantum level. These ultracold quantum gases can now be considered as rather universal instruments to examine current issues and interesting physical phenomena coming from many different areas of physics, such as quantum physics, quantum information, solid-state physics, many-body physics and molecular physics.

In this course we will discuss both the fundamentals as well as exciting, current research examples.

Content

- laser and evaporative cooling
- atomic and molecular traps
- ultra-cold collisions
- Bose-Einstein condensation
- degenerate Fermi gases
- matter-waves interferometry
- superfluidity
- artificial solid with optical lattices
- non-linear dynamics with cold atoms

Prerequisites

Fundamentals of Quantum Mechanics and Atomic Physics

Details

- Lecture (3 SWS), exercises (2 SWS)
- 6 ECTS credits

Lecturer

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