

PC5239, Special Problems in Physics:

Ultracold Quantum Matter

This module introduces from an experimentalist's point of view to the modern world of ultracold quantum gases that so much changed atomic physics in the past two decades. The lectures present the basic experimental methods of laser cooling, magnetic and optical trapping, and evaporative cooling that produce matter near absolute zero temperature. We then discuss basic effects like Bose-Einstein condensation and Pauli pressure. Further, selected research examples are presented that give insight to some of the many close relations between quantum matter designed in many labs worldwide and other physical systems found in the range of quantum information science, condensed matter physics, metrology, nuclear physics, and astronomy.

PC5239, 1. sem AY10/11, cred. 4, Mon 8-10 pm + Wed 6-8 pm, S12-04-03
prerequisites: Quantum Mechanics, Atomic Physics, Statistical Physics,
inquiries: A/P Kai Dieckmann (CQT), <http://qmatter.quantumlah.org/>

