Announcement

**Advanced Quantum Mechanics**
Prof. Dr. Wolfgang P. Schleich

**Description**
Whereas the first course of quantum mechanics focuses on developing the concepts and the formalism of non-relativistic quantum mechanics, the course “Fortgeschrittene Methoden der Quantenmechanik” addressed relativistic quantum field theory and, in particular, quantum electrodynamics. In “Advanced Quantum Mechanics” we return to non-relativistic quantum mechanics and focus on associating pictures with this formalism. Here semiclassical techniques as well as quantum phase space distribution functions will play a central role.

**Content**
The following topics will be addressed:

- Quantum mechanical harmonic oscillator
- Quantum states such as coherent states
- Semiclassical quantum mechanics à la WKB
- Glauber-Sudarshan phase space distribution functions
- Coherence functions
- Non-relativistic Lamb shift

**Prerequisites**
nonrelativistic quantum mechanics

**Literature**
W.P. Schleich, Quantum Optics in Phase space (Wiley-VCH, Weinheim, 2001)

**Additional Information**
Lecture (3 hours/week) with exercises (2 hours/week)
6 ECTS credits

**Lecturer**
Prof. Dr. Wolfgang P. Schleich, Institute of Quantum Physics