

Advanced Seminar – Winter Term 2016/17

Ultracold Quantum Gases

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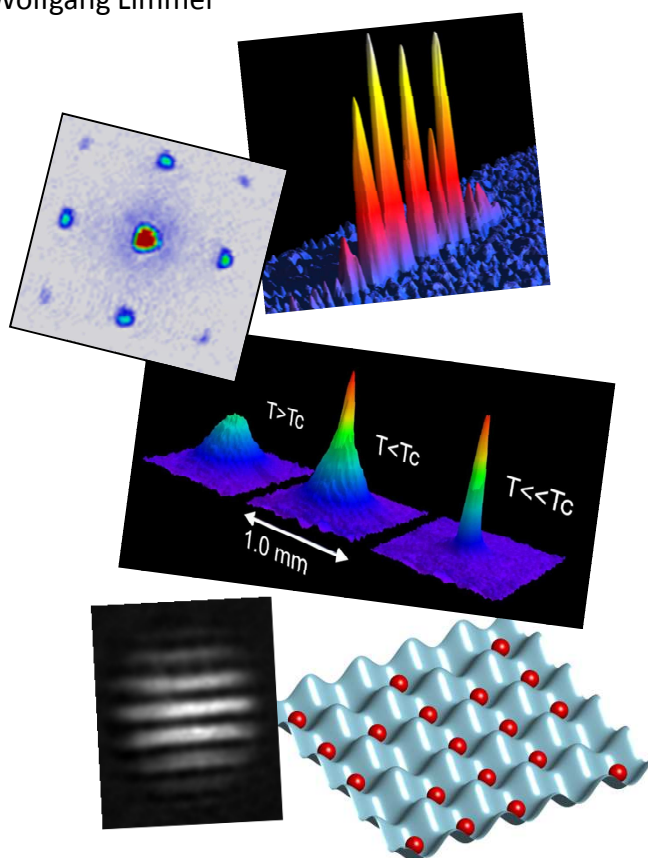
Institute of Quantum Matter

Description:

The seminar addresses both fundamental and advanced topics in the fascinating field of ultracold quantum gases.

The talks are based on a small number of selected publications and are intended to provide a good understanding of the underlying physics.

Enough time is arranged for relaxed and stimulating discussions in order to deepen the acquired knowledge.



Prerequisites:

Profound knowledge in atomic physics and quantum mechanics

Language:

The presentations should be written in English. The spoken language will be German or English, depending on the students' preference and the participation of international students.

List of talks (preliminary):

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| 1. Atom laser | 7. Optical lattices and Hubbard model |
| 2. Bragg diffraction with cold atoms | 8. Ultracold molecules |
| 3. Matter-wave interferometry and gravitational measurements | 9. Repulsively bound atom pairs |
| 4. Nonlinear atom optics, 4-wave mixing, and solitons | 10. Ultracold Fermi gases |
| 5. Matter wave amplification | 11. Quantum cradle |
| 6. Scattering length and Feshbach resonance | 12. Quantum walk |
| | 13. Anderson localization |
| | 14. Rydberg atoms |

ECTS credits: 4