



| Module | <i>Open Quantum Systems</i> |
|--------------------------------|---|
| Code | 71766 |
| Instruction language | English |
| ECTS credits | 6 |
| Credit hours | 5 |
| Duration | 1 semester |
| Cycle | Winter semester |
| Coordinator | Dean of Physics Studies |
| Lecturer | Prof. Susana Huelga |
| Allocation to study programmes | Physics M.Sc., elective module, 1 st or 2 nd semester Wirtschaftsphysik M.Sc., elective module, 1 st - 3 rd semester |
| Formal prerequisites | None |
| Recommended prerequisites | None |
| Learning objectives | Students who successfully passed this module <ul style="list-style-type: none">• can describe theoretically an open quantum system• are familiar with the theoretical concepts of coherence and decoherence in a quantum system |
| Syllabus | <ul style="list-style-type: none">• Description of systems• Environment interactions and dynamics of open quantum systems• Coherent Dynamics• Decoherence and re-Coherence• Relation to current experiments |
| Literature | <ul style="list-style-type: none">• M.A. Nielsen and I. Chuang, "Quantum Computing and Quantum Information", Cambridge University Press• Preskill, Quantum Computation Lecture Notes |
| Teaching and learning methods | Lecture (3 hours per week) Exercise (2 hours per week) |
| Workload | 45 hours lecture (attendance time) 30 hours exercise (attendance time) 105 hours self-study and exam preparation Total: 180 hours |
| Assessment | Written or oral examination. A prerequisite for the participation in the examination is an ungraded course achievement. Form and scope of the examination and of the course achievement are determined and notified by the lecturer at the beginning of the course. |
| Examination | 12581 Open Quantum Systems (precourse) 12580 Open Quantum Systems |
| Grading procedure | The module grade is the examination grade. |



Basis for

Research in the fields of Quantum Information and Technologies
