Quantum Optics - physics631

Course	**Quantum Optics**
Course No.	physics631

Category	**Type**	**Language**	**Teaching hours**	**CP**	**Semester**
Elective	Lecture with exercises	English	3+1	6	WT

Requirements for Participation:

Preparation:

Form of Testing and Examination:

Examination written or oral (announced at the beginning of the module).

Prerequisite for participation in the exam: successful work within the exercises.

Length of Course: 1 semester

Aims of the Course: Make the students understand quantum optics and enable them to practically apply their knowledge in research and development.

Contents of the Course:

Quantization of the electromagnetic field, single-mode quantum optics

Representations of the light field; Quasi-probabilities

Coherence, correlation functions;

Nonclassical light

Interaction of quantized radiation and atoms;

Introduction to quantum information

Recommended Literature:

R. Loudon; The quantum theory of light (Oxford University Press 2000)

G. J. Milburn, D. F. Walls; Quantum Optics (Springer 1994)

C. Gerry, P. Knight; Introductory quantum optics (Cambridge University Press 2004)

D. Meschede; Optics, Light and Lasers (Wiley-VCH, 3rd ed. 2017)

M. O. Scully, M. S. Zubairy; Quantum Optics (Cambridge 1997)

P. Meystre, M. Sargent; Elements of Quantum Optics (Springer 1999)

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