

<b>Module:</b>	<b>Specialization: Experimental Physics</b>
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Module No.: physics61a

<b>Course:</b>	 <b>Quantum Optics</b>
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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)