Module title			Abbreviation
FOKUS Quantum Information Technology			11-FM-QUI-132-m01
Module coordinator		**Module offered by**	
Managing Director of the Institute of Applied Physics		Faculty of Physics and Astronomy	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Basic concepts of quantum mechanics, quantum bits and algorithms, quantal measurements, experimental approaches towards quantum computing (on the basis of photons, ions and nuclear spins), quantum operations and quantum noise, quantum information and communication.

Intended learning outcomes

The students have special and advanced knowledge of independent scientific work in the field of quantum information, they are able to reproduce the acquired knowledge, to apply the acquired methods, to summarise a subarea of the current research area in an oral presentation and to successfully implement the acquired knowledge and methods in a mini research project.

Courses (type, number of weekly contact hours, language — if other than German)

Quanteninformationstechnologie (Quantum Information Technology): V (3 weekly contact hours) + Ü/P (1 weekly contact hour), German or English, once a year (winter semester)
Kompaktseminar Quanteninformationstechnologie (Block Taught Seminar Quantum Information Technology): S (2 weekly contact hours), German or English, details on availability to be announced (block taught seminar (3 days), usually held during semester break)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

This module has the following assessment components
1. Topics covered in lectures and exercises: written examination (approx. 90 minutes) or talk (approx. 30 minutes) or oral examination of one candidate each or oral examination in groups (approx. 30 minutes) or project report (approx. 8 pages)
2. Seminar: talk (approx. 30 to 45 minutes)

Assessment components 1 and 2 will be offered in German or English.
Students must register for assessment components 1 and 2 online (details to be announced).
Assessment component 1 will be offered once a year in the winter semester; details on when assessment component 2 will be offered to be announced.
To pass this module, students must pass both assessment component 1 and assessment component 2.

Allocation of places

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Additional information

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) FOKUS Physics (2011)