

<b>Module title</b>		<b>Abbreviation</b>
FOKUS Research Module Quantum Phenomena in electronic correlated Materials with Mini Research Project		11-FM-QPM-MF-092-m01
<b>Module coordinator</b>		<b>Module offered by</b>
chairperson of examination committee		Faculty of Physics and Astronomy
<b>ECTS</b>	<b>Method of grading</b>	<b>Only after succ. compl. of module(s)</b>
14	numerical grade	--
<b>Duration</b>	<b>Module level</b>	<b>Other prerequisites</b>
1 semester	graduate	--
<b>Contents</b>		
<p>Specific and advanced knowledge of independent scientific work in a current research area, especially in the specialist field of quantum phenomena in electronically correlated materials, reproduction of knowledge, acquisition of social and methodological competencies. Application of the acquired professional knowledge and methods to new scientific questions in a mini research project (e.g. experiments, case studies etc.). Introduction to the exciting and current research area of "strongly correlated electron systems": Metal-insulator transitions, Kondo effect, heavy fermions, high-temperature superconductivity, and much more.</p>		
<b>Intended learning outcomes</b>		
<p>The students have special and advanced knowledge of independent scientific work in a current research area, especially in the specialist field of quantum phenomena in electronically correlated materials, and are able to reproduce the acquired knowledge, to apply the acquired methods, to summarise a sub-area of the current research area in an oral presentation and to successfully implement the acquired knowledge and methods in a mini research project.</p>		
<b>Courses</b> (type, number of weekly contact hours, language — if other than German)		
<p>Quantenphänomene in elektronisch korrelierten Materialien (Quantum Phenomena in Electronic Correlated Materials): V (3 weekly contact hours) + Ü/P (1 weekly contact hour), German or English, once a year (details to be announced)</p> <p>Kompaktseminar Quantenphänomene in elektronisch korrelierten Materialien (Block Taught Seminar Quantum Phenomena in Electronic Correlated Materials): S (2 weekly contact hours), German or English, details on availability to be announced (block taught seminar (3 days), usually held during semester break)</p> <p>Miniforschungsprojekt Quantenphänomene in elektronisch korrelierten Materialien (Mini Research Project Quantum Phenomena in Electronic Correlated Materials): P (2 weekly contact hours), German or English, details on availability to be announced (either block taught during semester break or approx. 3 weeks part time)</p>		
<b>Method of assessment</b> (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
<p>This module has the following assessment components</p> <ol style="list-style-type: none"> <li>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)</li> <li>2. Seminar: talk (approx. 30 to 45 minutes)</li> <li>3. Research project: project report (approx. 8 pages)</li> </ol> <p>Assessment components 1 through 3 will be offered in German or English. Students must register for assessment components 1 through 3 online (details to be announced). Assessment component 1 will be offered once a year (details to be announced); details on when assessment components 2 and 3 will be offered to be announced. To pass this module, students must pass each of the assessment components 1 through 3.</p>		
<b>Allocation of places</b>		
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<b>Additional information</b>		
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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 (2010)

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