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| <b>Module title</b>   |                          | <b>Abbreviation</b>                         |
| FOKUS Research Module Quantum Transport in Semiconductor Nanostructures   |                          | 11-FM-QTH-102-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> |
| 10  | 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 the field of quantum transport. Transport phenomena that cannot be observed in classical electronic switches appear in highly miniaturised electronic components. The research module provides insights into production techniques, characteristics and application fields of modern nanoelectronic components, which function on the basis of ballistic and coherent transport.</p>   |                          |   |
| <b>Intended learning outcomes</b>   |                          |   |
| <p>The students have special and advanced knowledge of independent scientific work in the current research area of quantum transport. They have mastered the basics of electronics of nanostructures in theory and practice. They know functions and applications of respective components and are able to reproduce the acquired knowledge, to apply the acquired methods and to summarise a field of the current research area in an oral presentation.</p>   |                          |   |
| <b>Courses</b> (type, number of weekly contact hours, language — if other than German)  |                          |   |
| <p>Quantentransport in Halbleiter-Nanostrukturen (Quantum Transport in Semiconductor Nanostructures): V (3 weekly contact hours) + Ü/P (1 weekly contact hour), German or English, once a year (summer semester)<br/>         Kompaktseminar Quantentransport in Halbleiternanostrukturen (Block Taught Seminar Quantum Transport in Semiconductor Nanostructures): 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>  |                          |   |
| <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> </ol> <p>Assessment components 1 and 2 will be offered in German or English.<br/>         Students must register for assessment components 1 and 2 online (details to be announced).<br/>         Assessment component 1 will be offered once a year in the summer semester; details on when assessment component 2 will be offered to be announced.<br/>         To pass this module, students must pass both assessment component 1 and assessment component 2.</p> |                          |   |
| <b>Allocation of places</b>   |                          |   |
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| <b>Additional information</b>   |                          |   |
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| <b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)  |                          |   |
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| <b>Module appears in</b>  |                          |   |
| <p>Master's degree (1 major) FOKUS Physics (2010)<br/>         Master's degree (1 major) FOKUS Physics (2011)<br/>         Master's degree (1 major) FOKUS Physics (2006)</p>   |                          |   |

