## Module title
Relativistic Effects in Mesoscopic Systems

## Abbreviation
11-RMS-092-m01

## Module coordinator
Managing Director of the Institute of Theoretical Physics and Astrophysics

## Module offered by
Faculty of Physics and Astronomy

<table>
<thead>
<tr>
<th>ECTS</th>
<th>Method of grading</th>
<th>Only after succ. compl. of module(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>numerical grade</td>
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## Duration
1 semester

## Module level
graduate

## Other prerequisites
Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew.

## Contents
Relativistic effects in mesoscopic systems. - Spin-orbit coupling. - Dirac equation. - Quantum Hall effect. - Topological insulators. - Majorana fermions

## Intended learning outcomes
The students have mastered the mathematical methods for the description of relativistic quantum systems, especially in the field of mesoscopic physics. They are able to apply their knowledge to simple systems.

## Courses
R + V (no information on SWS (weekly contact hours) and course language available)

## Method of assessment
a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes)

Assessment offered: When and how often assessment will be offered depends on the method of assessment and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and examination regulations) 2009.

Language of assessment: German, English

## 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
Bachelor' degree (1 major) Physics (2010)
Bachelor' degree (1 major) Physics (2012)
Bachelor' degree (1 major) Mathematical Physics (2009)
Bachelor' degree (1 major) Mathematical Physics (2012)
Master's degree (1 major) Mathematics (2010)
| Master's degree (1 major) Physics (2010) |
| Master's degree (1 major) Physics (2011) |
| Master's degree (1 major) Nanostructure Technology (2011) |
| Master's degree (1 major) Nanostructure Technology (2010) |
| Master's degree (1 major) Mathematical Physics (2012) |
| Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) |
| Master's degree (1 major) FOKUS Physics (2010) |
| Master's degree (1 major) FOKUS Physics (2011) |