**Module title**: Particle Physics (Standard Model)  
**Abbreviation**: 11-TPSM-Int-201-m01

**Module coordinator**: Managing Director of the Institute of Theoretical Physics and Astrophysics  
**Module offered by**: Faculty of Physics and Astronomy

**ECTS** | **Method of grading** | **Only after succ. compl. of module(s)**
---|---|---
6 | numerical grade | --

**Duration** | **Module level** | **Other prerequisites**
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1 semester | graduate | Approval from examination committee required.

**Contents**
- Theoretical description of the Standard Model
- Electroweak symmetry breaking through the Higgs mechanism
- Parity Violation
- Bhabha scattering
- Z-Line Shape and forward / reverse asymmetry
- Higgs production and decay
- Experimental setup and results of key experiments to test the Standard Model and for determining its parameters
- Search for the Higgs boson

**Intended learning outcomes**
Students know the theoretical fundamental laws of the standard model of particle and the key experiments that have established and confirmed the standard model. They have basic knowledge in order to interpret experimental or theoretical results in the framework of the standard model and can and knows its significance and limitations.

**Courses** (type, number of weekly contact hours, language — if other than German)
- **V (3) + R (1)**
  Module taught in: English

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

a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes).

If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest.

Language of assessment: English

Assessment offered: In the semester in which the course is offered and in the subsequent semester

**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) Physics International (2020)