Module title
Models Beyond the Standard Model of Elementary Particle Physics

Abbreviation
11-BSM-161-m01

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

Module offered by
Faculty of Physics and Astronomy

ECTS
6

Method of grading
numerical grade

Only after succ. compl. of module(s)
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Duration
1 semester

Module level
graduate

Other prerequisites
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Contents
1. Principles of the standard model of Elementary Particle Physics
2. Tests of the standard model in low energy experiments and at high energy colliders
3. Neutrino physics
4. Higgs physics.

In addition, a selection of topics from the following fields will be covered in different years:
- Phenomenology of experiments at the LHC,
- particle cosmology,
- extended gauge theories,
- models with extended Higgs sectors,
- supersymmetry,
- models with additional space-time dimensions

Intended learning outcomes
The students are familiar with the tests and limits of the standard model of Particle Physics, Higgs physics and neutrino physics. They are able to formulate extensions of the standard model. Furthermore, they know how to test these extensions in low energy experiments, at high energy colliders and in cosmology.

Courses
V (3) + R (1)
Module taught in: German or English

Method of assessment
written examination (approx. 90 to 120 minutes) or oral examination of one candidate each (approx. 30 minutes) or oral examination in groups (groups of 2, approx. 30 minutes per candidate) or project report (approx. 8 to 10 pages) or 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.
Assessment offered: In the semester in which the course is offered and in the subsequent semester
Language of assessment: German and/or 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
Master's degree (1 major) Mathematics (2016)
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