Module title			Abbreviation
Particle Physics (Standard Model)			11-TPS-152-m01
Module coordinator		**Module offered by**	
Managing Directors of the Institute of Applied Physics and the Institute of Theoretical Physics and Astrophysics		Faculty of Physics and Astronomy	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
8	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

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

The students know the theoretical fundamental laws of the standard model of Particle Physics and the key experiments that have established and confirmed the standard model. They are able to interpret experimental or theoretical results in the framework of the standard model and know its validity and limits.

Courses (type, number of weekly contact hours, language — if other than German)

V (4) + R (2)
Module taught in: German or 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)

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.
Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

240 h

Teaching cycle

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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 (2015)
Bachelor' degree (1 major) Mathematical Physics (2015)
Bachelor' degree (1 major) Mathematical Physics (2016)
Bachelor' degree (1 major) Physics (2020)
Bachelor' degree (1 major) Mathematical Physics (2020)