

Theoretical Particle Physics - physics615

Degree - M.Sc. in Physics (PO von 2014)

<i>Module</i>	Specialization: Theoretical Physics
<i>Module No.</i>	physics61c

<i>Course</i>	Theoretical Particle Physics
<i>Course No.</i>	physics615

Category	Type	Language	Teaching hours	CP	Semester
Elective	Lecture with exercises	English	3+2	7	WT

Requirements for Participation:

Preparation:

Advanced quantum theory (physics606)

Quantum field theory (physics755)

Group theory (physics751)

Form of Testing and Examination: Requirements for the examination (written): successful work with the exercises

Length of Course: 1 semester

Aims of the Course: Introduction to the standard model of elementary particle physics and its extensions (unified theories)

Contents of the Course:

Classical field theory, gauge theories, Higgs mechanism;

Standard model of strong and electroweak interactions;

Supersymmetry and the supersymmetric extension of the standard model;

Grand unified theories (GUTs);

Neutrino physics;

Cosmological aspects of particle physics (dark matter, inflation)

Recommended Literature:

T. P. Cheng, L.F. Li: Gauge theories of elementary particle physics (Clarendon Press, Oxford 1984)

M. E. Peskin, D.V. Schroeder; An introduction to quantum field theory (Addison Wesley, 1995)

J. Wess; J. Bagger; Supersymmetry and supergravity (Princeton University Press 1992)

