Theoretical Particle Physics - physics615

Course	**Theoretical Particle Physics**
Course No.	physics615

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

Requirements:

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)

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