

## Theoretical Particle Physics - physics615

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

<b>Category</b>	<b>Type</b>	<b>Language</b>	<b>Teaching hours</b>	<b>CP</b>	<b>Semester</b>
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)

PDF version of this page.