



Universität Hamburg

DER FORSCHUNG | DER LEHRE | DER BILDUNG

CHAMPP

CENTER IN HAMBURG FOR
ASTRO-, MATHEMATICAL AND
PARTICLE PHYSICS

LECTURE COURSE IN THE QUANTUM UNIVERSE RESEARCH SCHOOL

Winter Term 2022 / 2023

Phenomenology of Physics Beyond the Standard Model

Gudrid Moortgat-Pick, Georg Weiglein

Course Description:

This lecture covers the following topics:

- Shortcomings of the Standard Model (SM), hierarchy problem and further motivations for physics beyond the SM (BSM)
- BSM physics: specific models versus effective field theories
- Precision tests of the electroweak and strong interactions
- Properties of supersymmetric theories
- Electroweak symmetry breaking, electroweak phase transition
- Majorana character, spin correlations, phase space parameterisation
- Examples for BSM phenomenology at the LHC and beyond
- Dark Matter: candidates, indirect and direct searches

Prerequisites:

Basic knowledge in Quantum Field Theory or Advanced Particle Physics

Date and Place: Tue, 9:15–10:45, SR 2, Building 2a, Bahrenfeld
Thu, 9:15–10:00, SR 2, Building 2a, Bahrenfeld

Problem Classes: Thu 10:00–10:45, SR 2, Building 2a, Bahrenfeld

Starting on: 25 October 2022
