



Universität Hamburg

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CHAMPP

CENTER IN HAMBURG FOR
ASTRO-, MATHEMATICAL AND
PARTICLE PHYSICS

LECTURE COURSE IN THE QUANTUM UNIVERSE RESEARCH SCHOOL

Winter Term 2021 / 2022

Phenomenology of Physics Beyond the Standard Model

Géraldine Servant

Course Description:

This lecture covers the following topics:

- Shortcomings of the Standard Model (SM)
- Higgs naturalness and the hierarchy problem
- Supersymmetric extensions of the Standard Model
- Extra-dimensions and Randall-Sundrum model
- Composite Higgs
- Effective Field Theory approaches to BSM
- Relaxion mechanism
- BSM phenomenology and searches at colliders
- Electroweak phase transition
- Flavour problem
- Flavour anomalies
- Dark matter
- Strong CP problem and axions
- Neutrinos
- Future at colliders and new strategies for BSM searches

Prerequisites:

Basic knowledge in Quantum Field Theory, Advanced Particle Physics and the Standard Model

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: 12 October 2021
