

## T 46: Eingeladene Vorträge I

Zeit: Mittwoch 14:00–16:00

Raum: Z6 - HS 0.001

**Eingeladener Vortrag** T 46.1 Mi 14:00 Z6 - HS 0.001  
**Search for New Physics at a Future Beamdump Facility at the CERN SPS: The SHiP Experiment.** — •DANIEL BICK — Universität Hamburg, Institut für Experimentalphysik, Luruper Chaussee 149, 22761 Hamburg

SHIP is a new general purpose fixed target facility, currently in the design phase at CERN. In its initial phase, the 400 GeV proton beam extracted from the SPS will be dumped on a heavy target with the aim of integrating  $2 \times 10^{20}$  pot in 5 years. A dedicated detector, based on a long vacuum tank followed by a spectrometer and particle identification detectors, will allow probing a variety of models with light long-lived exotic particles and masses below  $\mathcal{O}(10)$  GeV/ $c^2$ . The main focus will be the physics of the so-called Hidden Portals, i.e. the search for Dark Photons, Light scalars and pseudo-scalars, and Heavy Neutrinos. Another dedicated detector will allow the study of neutrino cross-sections and angular distributions.  $\nu_\tau$  deep inelastic scattering cross sections will be measured with a statistics 1000 times larger than currently available, with the extraction of the  $F_4$  and  $F_5$  structure functions, never measured so far and allow for new tests of lepton non-universality with sensitivity to BSM physics.

**Eingeladener Vortrag** T 46.2 Mi 14:24 Z6 - HS 0.001  
**NNLO QCD in Higgs and vector-boson processes at the LHC** — •MARIUS WIESEMANN — CERN, Geneva, Switzerland

The LHC is entering its precision era. Without any clear signs of physics beyond the Standard Model in hadron collisions, the measurement of small deviations from Standard-Model predictions has become the best opportunity to disentangle new-physics phenomena. This requires, in particular, highly precise theoretical predictions of Standard-Model processes. In this talk, state-of-the-art radiative corrections at NNLO QCD are presented for several production processes involving Higgs and vector-boson final states. All possible leptonic decay channels of the vector bosons are included in the calculations, by consistently accounting for all resonant and non-resonant diagrams, off-shell effects and spin correlations. The underlying NNLO subtraction procedure is discussed in detail, and we introduce an automatic extrapolation procedure that allows us, for the first time, to control the systematic uncertainties of qT subtraction down to the few per-mille level (or better). Several direct applications of the results in LHC measurements are discussed.

**Eingeladener Vortrag** T 46.3 Mi 14:48 Z6 - HS 0.001

**Searches for Dark Matter at Belle II** — •TORBEN FERBER — DESY, Hamburg, Germany

The next-generation B-factory experiment Belle II at the upgraded KEKB accelerator, SuperKEKB, will start physics data taking in 2018. It is an asymmetric e+e- collider that will operate with 40x the instantaneous luminosity of KEKB/Belle and aims to collect 50 times more data in total. Belle II offers the possibility to search for a large variety of dark sector particles in the GeV mass range complementary to LHC and dedicated low energy experiments. These searches will profit both from the very large dataset that will be acquired by the Belle II experiment, and from specifically designed triggers for the early running of Belle II. This talk will review planned dark sector searches with a focus on the discovery potential of the first data.

**Eingeladener Vortrag** T 46.4 Mi 15:12 Z6 - HS 0.001  
**Search for Dark Matter with the ATLAS detector** — •KATHARINA BIERWAGEN — Johannes Gutenberg-Universität Mainz

Cosmological and astrophysical observations indicate the presence of Dark Matter in the universe which cannot be explained by the Standard Model. Searches for Dark Matter are performed by both the ATLAS and CMS experiment in events involving large missing transverse momentum in the final state. So far no signal for physics beyond the Standard Model has been found.

This talk summarizes the recent results by the ATLAS Collaboration based on the full proton-proton collision dataset collected at a centre-of-mass energy of 13 TeV in 2015 and 2016.

**Eingeladener Vortrag** T 46.5 Mi 15:36 Z6 - HS 0.001  
**Highlights from Higgs physics in CMS** — •CHAYANIT ASAWATANGTRAKULDEE — DESY, Hamburg, Germany

The latest results related to the Higgs boson, h(125), are presented using proton-proton collision data corresponding to an integrated luminosity of  $35.9 \text{ fb}^{-1}$  at a center-of-mass energy of 13 TeV recorded by the CMS detector at the LHC. In particular, the highlights will be shown including updated results from ZZ and  $\gamma\gamma$  decay channels, the newest results from Higgs boson decays to  $\tau\tau$ ,  $\mu\mu$ , Higgs boson decays to a pair of b-quarks in associated with vector bosons (W/Z) production and boosted gluon fusion production, as well as highlights from Higgs boson production with top-quarks. In addition, the latest results from a pair production of the Higgs boson will be also discussed in this talk.