

T 98: Eingeladene Vorträge 3

Zeit: Donnerstag 14:00–16:15

Raum: H 1

Eingeladener Vortrag

T 98.1 Do 14:00 H 1

Exploring the LHC flavour anomalies — •LARS HOFER — Universität de Barcelona

Semileptonic B decays are highly sensitive to Physics beyond the Standard Model. Therefore it is quite intriguing that LHCb has found several tensions in these channels, yielding a combined significance of more than 4σ . I will discuss the current status of global analyses of the data and contrast explanations in terms of non-perturbative hadronic effects with solutions via high-scale New Physics.

Eingeladener Vortrag

T 98.2 Do 14:27 H 1

Semileptonic b -decays: Preparing theory predictions for the era of high-luminosity experiments — •DANNY VAN DYK — Universität Zürich, Winterthurerstrasse 190, 8057 Zürich, Schweiz

Semileptonic decays of b -hadrons comprise an important set of probes for physics beyond the Standard Model. In order to fully use the existing and upcoming measurements from the B factory experiments, the LHC, and future high-luminosity experiments, theoretical inputs for hadronic matrix elements in semileptonic decays must be available with high precision. I will present a choice of approaches that are successful in reducing the theory uncertainties of these matrix elements. The impact of these reduced theory uncertainties on Standard Model predictions, as well as constraints on models beyond the Standard-Model, will also be discussed.

Eingeladener Vortrag

T 98.3 Do 14:54 H 1

Physics Prospects at Belle II — •DANIEL GREENWALD — Technische Universität München

The Belle II experiment, a major upgrade of the Belle experiment, will run at the SuperKEKB asymmetric-energy e^+e^- collider at the KEK laboratory in Japan. SuperKEKB is an upgrade of the KEKB collider and will run at approximately forty-times higher luminosity than its predecessor. Belle II aims to collect data from 50 ab^{-1} of integrated luminosity—fifty times more than its predecessor. This data set will provide unprecedented precision in B, D, and τ decays and allow for searches for rare decays and signs of physics beyond the standard model. We will present some of the physics prospects of the Belle II experiment.

Eingeladener Vortrag

T 98.4 Do 15:21 H 1

Studies towards optimisation of a highly granular calorimeter for future linear collider detectors — •HUONG LAN TRAN for the CALICE-D-Collaboration — Deutsches Elektronen Synchrotron DESY

The Particle Flow approach to calorimetry requires highly granular calorimeters and sophisticated software in order to reconstruct and identify individual particles in complex event topologies. The high calorimeter granularity can also provide a discrimination of the electromagnetic sub-showers in hadron showers. This discrimination can be utilised in an offline weighting scheme, the so-called software compensation technique, to reduce the fluctuation of the calorimeter response due to the electromagnetic sub-showers and therefore improves the energy resolution for single particles. The improvement in the single particle energy resolution can then lead to a better jet energy resolution. This talk will give a detailed description of the software compensation technique and its implementation in Particle Flow reconstruction. The impact of software compensation on the choice of optimal transverse granularity for the Analogue Hadronic Calorimeter (AHCAL) option of the International Large Detector (ILD) concept is also discussed.

Eingeladener Vortrag

T 98.5 Do 15:48 H 1

The CMS Tracker Upgrades – Pushing the Limits — •BENEDIKT VORMWALD — Institute of Experimental Physics, Luruper Chaussee 149, 22761 Hamburg

During the extended year end technical stop 2016/2017 of the LHC, the CMS collaboration is installing a completely new pixel detector (Phase 1) as LHC is going to exceed the design luminosity of the old detector of $10^{34} \text{ cm}^{-2}\text{s}^{-1}$. The new detector will feature higher tracking efficiency and lower mass with four barrel layers and three forward/backward disks to provide a 4-hit coverage up to absolute pseudo-rapidities of 2.5.

For the high luminosity phase of the LHC starting around 2026, CMS will replace the entire silicon tracking system by new silicon strip and pixel detectors (Phase 2). The upgraded systems need to be able to cope with an instantaneous luminosity of up to $7 \times 10^{34} \text{ cm}^{-2}\text{s}^{-1}$ for a total of 3000 fb^{-1} in order to maintain the physics reach. Intense R&D activities are ongoing in order to define the final design of both subsystems.

In this talk, I will present the features and installation status of the Phase-1 pixel detector and discuss current developments and novel technologies and concepts of the Phase-2 tracker upgrade.