

T 74: Eingeladene Vorträge V

Zeit: Donnerstag 14:00–15:30

Raum: H02

Eingeladener Vortrag T 74.1 Do 14:00 H02
Upgrade of the ATLAS Pixel Detector — ●MATTHIAS HAMER
— Physikalisches Institut, University of Bonn

In order to meet the requirements at the High-Luminosity LHC, the ATLAS inner detector will be upgraded to an all silicon tracker, the Inner Tracker ITk, until 2025. The ITk will consist of a five layer pixel detector and a four layer strip detector. Due to the harsh environment at the High-Luminosity LHC, the ITk pixel detector will consist of newly developed front-end electronics and sensors, namely the RD53 chip and thin n-in-p sensors. The dense tracking environment requires a higher granularity compared to the currently used pixel detector, significantly higher data transmission rates and low mass global and local supports. An overview on the resulting challenges for the mechanical design and layout, the powering and data transmission schemes, testing and operation will be given, and the current status of the ongoing developments to meet these challenges will be presented.

Eingeladener Vortrag T 74.2 Do 14:30 H02
Model independent search for new physics — ●SARANYA SAMIK GHOSH — Physik Institut III. A., RWTH Aachen University, Germany

Several experimental searches dedicated to searching for new physics beyond the standard model (BSM) have been performed in dedicated experiments as well as general collider experiments such as those at the Large Hadron Collider (LHC). These searches are typically developed around specific BSM predictions, with the investigated final states and kinematic selections being chosen and optimised to have sensitivity to a particular model or a few limited models. These search strategies are limited due to constraints on experimental resources and personpower.

The limitations on dedicated search analyses, the sizeable number and variety of proposed BSM physics models, and the large datasets collected by several experiments, in particular by collider experiments including those at the LHC, highlight the importance of developing generalised model independent approaches to search for new physics in the large datasets available for analysis. Furthermore, such model independent searches are potentially sensitive to unforeseen physics phenomena that have not been included in any of the currently theorised models and hence likely to be overlooked by model driven search strategies. This talk will discuss the recent approaches and accomplishments of model independent searches for new physics in collider experiments.

Eingeladener Vortrag T 74.3 Do 15:00 H02
The XENON Dark Matter Project: Latest Results and Future Prospects — ●CONSTANZE HASTEROK — Max-Planck-Institut für Kernphysik, Heidelberg, Germany

Weakly interacting massive particles (WIMPs) are a very popular explanation for the nature of dark matter. The XENON1T experiment aims for the direct detection of WIMP-nucleon interactions using a dual-phase time projection chamber (TPC) with a liquid xenon target of 3.5 tons. With the data acquired in the two science runs of a total of one tonne year exposure, the experiment could impose the most stringent upper limit on spin-independent WIMP-nucleon cross-sections with $4.1 \cdot 10^{-47} \text{ cm}^2$ at a mass of $30 \text{ GeV}/c^2$. After an overview on the XENON1T experiment, the talk will focus on the latest results of searches beyond the standard WIMP model. Finally, the detector upgrade XENONnT will be presented.