

T 26: Eingeladene Vorträge II

Zeit: Dienstag 14:00–15:30

Raum: H03

Eingeladener Vortrag T 26.1 Di 14:00 H03
The SHiP Experiment - Current Status & Test Beam Results
 — ●ANNIKA HOLLNAGEL — Johannes Gutenberg-Universität Mainz

SHiP has been proposed as a general-purpose fixed-target facility at the CERN SPS North Area, with the start of data taking scheduled for 2026. Consisting of a two-fold detector, it combines the Search for Hidden Particles (SHiP), such as Heavy Neutral Leptons (HNL) and light dark matter, with studies of tau neutrino physics. An additional third detector would enable research on Lepton Flavour Violation.

The impact of the high-intensity 400 GeV/c proton beam on the hybrid target may create HNL via the decay of heavy mesons and other weakly interacting particles of masses $m \lesssim 10 \text{ GeV}/c^2$. After a hadron absorber and an active muon shield, these particles are expected to decay inside a large vacuum vessel which is followed by a magnetic spectrometer and a calorimeter. To discriminate against external particle interactions, the decay vessel will be covered by the Surrounding Background Tagger (SBT).

Currently in the R&D phase, several studies have already been performed at the CERN test beam facilities. These include measurements of muon flux and charm production using a replica SHiP target exposed to the SPS proton beam, as well as performance tests of prototype segments for the Liquid Scintillator SBT wrt. particles of various type and energy.

Eingeladener Vortrag T 26.2 Di 14:30 H03
Frontier silicon detectors for particle physics and industrial applications — ●HENDRIK JANSEN — DESY, Hamburg

In this contribution, I review the challenges and recent developments in the field of silicon-based particle detectors in the light of the high luminosity LHC and possible future colliders, with special emphasis on test beam results. Additionally, I exemplify the usage of such detectors in industrial applications such as non-destructive testing and medical imaging.

Eingeladener Vortrag T 26.3 Di 15:00 H03
Physics beyond the Standard Model with IceCube — ●ANNA POLLMANN — Bergische Universität Wuppertal

The IceCube neutrino observatory is a neutrino telescope situated near the South Pole in Antarctica. A cubic kilometer of ice is instrumented with optical modules containing photomultiplier tubes. When high energetic particles produce light in interactions with the ice, the signature can be recorded and used for reconstruction of the primary particle.

The design of IceCube not only facilitates the detection of astrophysical neutrinos up to PeV energies but also the direct and indirect probe of physics beyond the Standard Model with leading sensitivities. Exotic particles which can penetrate through the ice sheet or even the entire Earth can be measured directly, these include magnetic monopoles or partially charged particles. Dark matter is indirectly searched for by investigating its effect on neutrino spectra as well as arrival directions.

The discovery of astrophysical neutrinos enables the measurement of neutrino interactions at unprecedented energies where new physics might emerge such as Lorentz Invariance Violation. The recent achievements of IceCube in the search for beyond Standard Model physics will be presented.