technische universität
dortmund

SEMINAR TEILCHENPHYSIK

Thema

Searching for Hidden Particles - From proposal to realisation

Abstract

The BDF/SHiP experiment is a general purpose intensity-frontier experiment for the search of feebly interacting GeV-scale particles and to perform neutrino physics measurements at the HI-ECN3 (high-intensity) beam facility at the CERN SPS. Operated in beam-dump mode this experiment takes full advantage of the available 4×10^19 protons per year at 400 GeV. In 2024, the CERN Research Board decided in favour of BDF/SHiP for the future programme of this facility.

The experimental setup consists of two complementary detector systems downstream an active muon shield. The former, the scattering and neutrino detector (SND), consists of a light dark matter (LDM) / neutrino target with vertexing capability. The latter, the hidden sector decay spectrometer (HSDS), consists of a 50 m long decay volume followed by a spectrometer, timing detector, and a PID system. BDF/SHiP offers an unprecedented sensitivity to decay and scattering signatures of various new physics models and tau neutrino physics.

In this seminar I will give an overview of the SHiP experiment and its physics aims, summarise the studies leading up to the successful proposal, and chart the course towards successful data taking in 2033. I will particularly focus on my own areas of involvement, i.e. the optimisation of the experimental design, the computing challenges faced for high-intensity zero-background experiments and machine learning applications in the collaboration.

Vortragender

Dr. Oliver Lantwin
Universität Siegen

Ort

CP-03-123

Zeit

Donnerstag, 17.07.2025
10:00 – 11:00 Uhr

im Auftrag:

Dr. Maik Becker