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Theory meets Experiment

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The BDF/SHiP experiment at the ECN3 high-intensity beam facility at the CERN SPS

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, taking full advantage of the available 4×10^{19} protons per year at 400 GeV. The CERN Research Board recently decided in favour of BDF/SHiP for the future programme of this facility.

The 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.

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