

SHiP: a new fixed target facility for searching for long-lived feebly interacting neutral particles

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SHiP is a new general purpose fixed target facility, whose Technical Proposal has been recently submitted to the CERN SPS Committee. In its initial phase, the 400GeV proton beam extracted from the SPS will be dumped on a heavy target with the aim of integrating 2×10^{20} pot in 5 years. A dedicated detector, based on a long vacuum tank followed by a spectrometer and particle identification detectors, will allow probing a variety of models with light long-lived exotic particles and masses below a few GeV/c². The main focus will be the physics of the so-called Hidden Sector, namely the search for Dark Photons, light scalars and pseudo-scalars and massive neutrinos. Some of these particles may be relevant within the context of SUSY models, which provides an interesting phenomenology to e.g. Vector Portal. Direct detection of light and long-lived SUSY particles, such as RPV neutralinos, s-Goldstinos, pseudo-Dirac gauginos could also be performed in an unexplored parameter range. This talk will be largely based on the paper Alekhin et al, arXiv: 1504.04855v1.

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