

Towards a measurement of charm production induced by 400 GeV/c protons on a thick target at CERN SPS

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The SHiP collaboration proposes a general purpose fixed-target experiment to search for hidden particles at the new beam-dump facility at CERN SPS. For the interpretation of these searches a precise knowledge of the differential charm production cross-section in a thick target, including the cascade production, is essential. To obtain this parameter, several dedicated measurements at CERN SPS have been proposed. A first measurement has been performed with 400 GeV/c protons interacting with a SHiP target replica of up to 1.6 nuclear interaction lengths. The production and decay of charmed hadrons in the target is detected by emulsion films employed in a moving brick containing emulsion cloud chambers. A magnetic spectrometer using silicon pixel, scintillating fiber and drift-tube detectors is built to measure charge and momentum of the decay daughters and is followed by an RPC muon tagger. We report on the experiment design, track matching and first results of an optimization run.

Summary

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