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CRYSTAL COLLIMATION EFFICIENCY MEASURED WITH THE MEDIPIX DETECTOR IN SPS UA9 EXPERIMENT

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Abstract

The UA9 experiment was performed in 6 MDs from May to November 2009 with the goal of studying the collimation properties of a crystal in the framework of a future exploitation in the LHC collimation system. An important parameter evaluated for the characterization of the crystal collimation is the efficiency of halo extraction when the crystal is in channeling mode. In this paper it is explained how this efficiency can be measured using a pixel detector, the Medipix, installed in the Roman Pot of UA9. The number of extracted particles counted by the Medipix is compared with the total number of circulating particles measured by the Beam Current Transformers (BCTs): from this comparison the efficiency of the system composed by the crystal, used in channeling mode, and a tungsten absorber is proved to be greater than 85%.

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