

Test of a prototype Microstrip Silicon Detector for the FOOT experiment

Monday 25 May 2020 19:36 (5 minutes)

The goal of the FOOT (FragmentatiOn Of Target) experiment is to measure the fragmentation cross-section of protons into H, C, O targets at beam energies of interest for hadrontherapy (50–250 MeV for protons and 50–400 MeV/u for Carbon ions). Given the short range of the fragments, an inverse kinematic approach has been chosen, hence requiring precise tracking capabilities in a magnetic volume for charged ions. A key subsystem for this task will be the Microstrip Silicon Detector, based on 150 micrometer thick single side microstrip sensors. In this work, we present the results of a test of the new version of a 64 channel low-noise/low power high dynamic range charge sensitive preamplifier-shaper readout ASIC, compared with the old version used in AMS-02 experiment. The test has been carried with 70-228 MeV proton beams. We also present a novel approach to evaluate the dynamic range of readout chips using a proton beam impinging at different angles on the sensor surface.

Funding information

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Session Classification: Poster

Track Classification: Sensors