



Characterization of the Microstrip Silicon Detector for the FragmentatiOn Of Target experiment

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- The main objective of the *FOOT (FragmentatiOn Of Target)* experiment is the measurement of the double differential cross-sections with respect to kinetic energy and emission angle of fragments produced in nuclear interactions at energies of interest for hadrontherapy (up to 400 MeV/u).
- The *Microstrip Silicon Detector* (MSD) is the last station of the FOOT magnetic spectrometer, used to reconstruct the position of the fragments with a spatial resolution $< 35\mu\text{m}$, to match the reconstructed tracks with the downstream scintillator and calorimeter hits.
- In order to reduce the amount of material needed, two perpendicular *Single-Sided Silicon Detector* (SSSD) sensors thinned down to $150\mu\text{m}$ are used for each MSD X-Y plane.
- The sensors produced were tested throughout the production chain first in the laboratory to ensure their correct operation. Further tests were carried out at the accelerators to test the operation of the complete setup that is used by the FOOT experiment.
- The data acquired allowed the characterization of the response of the detectors to heavy charged particles such as Carbon in terms of noise performance, signal, cluster characteristics and spatial resolution.

