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# P19 - Performance of a gas flow ionization detector filled with He-iC4H10 mixtures for STIM-T

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A cylindrical gas flow ionization chamber has been developed for measuring particle energy for Scanning Transmission Ion Microscopy Tomography (STIM-T) experiments. Due to its ability to withstand the direct beam this type of detector is of great importance for efficient performance of on-axis STIM-T. The response of a He-iC4H10 filled ionization detector to 2 MeV H+ and He+ beams irradiation was studied. Different operating parameters such as concentration of isobutane (iC4H10) (in the range of 55% to 100%), anode voltage, amplifier shaping time, proton scattering at the detector entrance canal and the solid angle of the detector were investigated. The stable operating plateau and the anode voltage at which the best energy resolution is attained were also determined for every gas mixture. The best energy resolution achieved so far for 2 MeV H+ and He+ particles was 1.3%, which is comparable to that of Si PIN diode detectors (in the range of 15-30 keV). Computed tomography (CT) was applied to a set of STIM projections acquired with the gas ionization chamber at the IST/CTN microprobe beam line in order to visualize the 3D-mass distribution in a test structure.

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