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A monolithic silicon telescope for hadron beams, S. Agosteo (Politecnico of Milano)

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A monolithic silicon telescope (MST) consisting of a surface ΔE detector 2 μm in thickness coupled to an E detector about 500 μm in thickness made out of a single silicon wafer was recently proposed for the microdosimetric characterization of hadron beams. The ΔE detector is segmented in a matrix of micrometric cylindrical diodes (about 9 μm in diameter, 2 μm in height).

The silicon microdosimeter was placed within a Lucite phantom at different depths and irradiated with clinical proton beams at the CATANA facility of the Italian Institute of Nuclear Physics (INFN). The microdosimetric spectra were directly compared with the ones measured in the same experimental conditions by a reference Tissue-Equivalent Proportional Counter (TEPC). The same device was also tested with 62 AMeV carbon ions at the INFN Laboratori Nazionali del Sud. The results of these experiments will be discussed in order to propose analogous measurements for assessing the quality of the CNAO therapy beams.

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Session Classification: Talks on proposed experimental activities at CNAO