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A BEAM MONITOR BASED ON MPGD DETECTOR FOR HADRON THERAPY

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In recent years, a remarkable scientific and technological progress led to the construction of accelerators based facilities dedicated to hadrontherapy was done. This kind of technology requires precise and continuous control of position, intensity and shape of the ions or protons used to irradiate cancers. Patient safety, accelerator operation and dose delivery should be optimized by a real time monitoring of beam intensity and profile during the treatment, by using detectors featuring not disruptive, high spatial resolution (beam current resolution less than few % and rate of the order of 10 kHz). In the framework of AMIDERHA (Enhanced Radiotherapy with HAdron) project funded by the Ministero dell'Istruzione, dell'università e della Ricerca (Italian Ministry of Education and Research) the authors are studying and developing an innovative beam monitor based on Micro Pattern Gaseous detectors characterized by a high spatial resolution and rate capability. The Monte Carlo simulation of the beam monitor prototype was carried on to optimize the geometrical set-up and to predict the behavior of the detector. A first prototype has been constructed and successfully tested using ^{55}Fe and ^{90}Sr and X-ray source. Preliminary results will be presented.

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