

Novel techniques for dose monitoring in particle therapy

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The use of proton and carbon beams to cure deep solid tumors (particle therapy) has become a widespread clinical practice. The favorable dose deposition pattern and the enhanced radiobiological effectiveness of light ion beams are valid tools to increase the local control probability and to spare the surrounding healthy tissues. The superior ballistic precision in dose release of these treatments must be matched by an accurate monitoring procedure. However, due to the complete absorption of the beam inside the patient, the monitoring in particle therapy must rely on the secondary particles emitted by the beam in its track inside the patients. A typical approach has been the use of the PET technique, namely the use of annihilation photons produced by the positron emitters created by the beam. In this talk will be presented charged particles. Both measurements of these secondary fluxes and the corresponding design of future detector will be reviewed.

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