

Prompt Gamma Imaging in Particle Therapy



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Contribution ID: 9

Type: **Keynote**

PG and PET for in-vivo Dose Verification in Particle Therapy

Thursday, 6 July 2023 13:15 (1 hour)

Particle beams show a unique physical characteristic known as the Bragg-peak, which enables conformal dose delivery to tumor with a lower entrance dose and zero exit dose. This property makes particle therapy highly effective, but accurate prediction of the Bragg-peak is one of the most important techniques to fully utilize the benefits of the expensive particle therapy. Various research has been carried out for the in-vivo dose verification in particle therapy. For this, direct and online measurement of the particle in the patient is essential, but the particle of charged for acceleration is stopped in the patient. The proposed method is to measure the prompt gammas (PG) or positron emission tomography (PET) which is generated by the particle induced nuclear reaction and emitted out of the patient. This study aims to introduce the PG and PET methods, that is, prompt gammas scanning system, in-room PET system, and integrated PG-PET system, carried out in Hanyang University, Mass. General Hospital, and Yonsei University, respectively.

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Session Classification: Keynote Presentation I