



Contribution ID: 11

Type: **not specified**

Novel Optimization Strategies for Clinical FLASH Proton Therapy

Thursday, 28 January 2021 10:00 (10 minutes)

Over decades, the number of patients diagnosed with cancer has been increasing, with expectations for the numbers to continue to rise in the future. The use of ionizing radiation for cancer treatment - radiotherapy - has become quite important as around 50% of all cancer patients have an indication for it. Treatments with radiotherapy are associated with side effects, arising from unavoidable damage to healthy tissue, which research on the field has been trying to reduce.

A new way of achieving reduced healthy tissue toxicity has been identified by biological studies, through an effect demonstrated by cells when irradiated with a high dose, for a very short time, using a very high dose-rate - the FLASH effect. Combined with precision irradiation techniques, namely proton therapy, the potential for substantially improved plans is great.

As the FLASH biological mechanism is still not understood, it's difficult to evaluate and compare different FLASH-compatible plans and so different metrics have been suggested. This project aims at building a framework for evaluation and comparison of FLASH-compatible proton therapy treatment plans, with focus on implementing strategies for optimization of metrics under a clinical treatment planning software. Evaluation is to be performed on stereotactic lung treatment plans.

Primary author: JOSE SANTO, Rodrigo

Co-authors: Dr HABRAKEN, Steven (Erasmus MC); Dr GONÇALVES, Patrícia (IST)

Presenter: JOSE SANTO, Rodrigo