



Contribution ID: 36

Type: **Talk**

FLASH radiotherapy with very high energy electrons: opportunities and challenges

Wednesday 25 June 2025 09:00 (30 minutes)

The purpose of radiotherapy (RT) in cancer therapy is to destroy malignant cells while sparing normal tissue. In the last years, it has been shown that irradiations with an ultra-high dose rate (i.e., larger than about 40 Gy/s) further spare healthy tissue and has the same effect on tumour cells with respect to irradiations with conventional dose rates (i.e., of the order of 10 Gy/min). This phenomenon is called the “FLASH effect” and can lead to a novel type of RT, the FLASH RT.

Large particle accelerators, such as those available for research purposes, are valuable machines to both understand the fundamental mechanisms of the FLASH effects (which are not yet completely understood) and to advance technology for making FLASH RT widely available in the future. In particular, very-high energy electrons (VHEE), accelerated in ultra-short pulses, can penetrate deep into human body and might enable the treatment of deep-seated tumours in the future.

This talk presents the current status of FLASH RT with electrons, with particular focus on opportunities and challenges in the use of VHEE.

Summary

Primary author: Dr GARGIONI, Elisabetta (Department of Radiotherapy and Radio-Oncology, University Medical Center Hamburg-Eppendorf)

Co-authors: SENADOR, Joel (Department of Radiotherapy and Radio-Oncology, University Medical Center Hamburg-Eppendorf); STRUVE, Nina (Department of Radiotherapy and Radio-Oncology, University Medical Center Hamburg-Eppendorf)

Presenter: Dr GARGIONI, Elisabetta (Department of Radiotherapy and Radio-Oncology, University Medical Center Hamburg-Eppendorf)

Session Classification: Pre-Workshop ”Medical applications”

Track Classification: Pre-Workshop ”Medical applications”