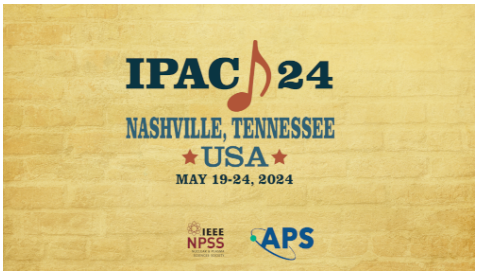

Contribution ID: **910** Contribution code: **THPR45** Type: **Poster Presentation**

Research on ultra-high energy electron beams for FLASH radiation therapy at ELSA

Thursday, 23 May 2024 16:00 (2 hours)

Ultra-high energy electrons (UHEE) are used to investigate their effect on tumor cells and healthy tissue in short pulses of microseconds at the electron accelerator facility ELSA. This may enable highly efficient treatment of deep-seated tumors due to the FLASH effect. In a preliminary setting electrons with an energy of 1.2 GeV are used to irradiate cell samples which are located inside a water volume, representing the human body. Irradiation occurs with dose rates of up to 10 MGy/s due to the short pulse lengths of 250 ns. The relative biological effectiveness (RBE) can be determined by assessing the cell survival of tissues under FLASH and conventional conditions. For a precise dose determination, dose measurements via radiochromic films are utilized and compared to simulations with Geant4, that reproduce the electromagnetic shower process.

Footnotes

Funding Agency

Funded by the TRA Matter and TRA Life and Health (University of Bonn) as part of the Excellence Strategy of the federal and state governments.

Paper preparation format

LaTeX

Region represented

Europe

Primary author: THOME, Leonardo (Bonn University)

Co-authors: PROFT, Dennis (Bonn University); GRUNWALD, Kelly (Bonn University); DESCH, Klaus (Bonn University); SPAETH, Susanne (University of Bonn); SWITKA, Michael (Bonn University)

Presenter: PROFT, Dennis (Bonn University)

Session Classification: Thursday Poster Session

Track Classification: MC8: Application of Accelerators, Technology Transfer, Industrial Relations, and Outreach: MC8.A28 Medical Applications