



Contribution ID: 2191 Contribution code: TUPL153

Type: **Poster Presentation**

Beam dynamics optimization of a modular and versatile linear accelerator-based system exploiting C-Band technology for VHEE FLASH Applications

Tuesday, 9 May 2023 16:30 (2 hours)

In the framework of a collaboration between Sapienza University of Rome, the Italian Institute for Nuclear Research (INFN) and the Curie Institute, the proposal of a new facility dedicated to the Very High Electron Energy (VHEE) FLASH irradiation is in progress. The aim is to exploit the promising VHEE regime for the translation of electron FLASH radiotherapy into clinical practice in order to treat deep tumors. For the translation to clinical practice, the electron energy should be varied in the 60-160 MeV range. The needed electron peak current is the order of 200 mA, that is 200 nC per 1 μ s pulse. The irradiation system also requires compactness for the installation inside a hospital or treatment facility. In order to satisfy both requirements, i.e. high energy and compact system, we propose a radio-frequency (RF) linear accelerator-based electron-beam source working in C-band at 5.712 GHz. In particular, we present the beam dynamics of the optimized high-gradient C-band linear accelerating system for the transport of high beam current beams for FLASH applications.

Funding Agency

Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary author: FAILLACE, Luigi (Istituto Nazionale di Fisica Nucleare)

Co-authors: GALLO, Alessandro (Istituto Nazionale di Fisica Nucleare); VANNOZZI, Alessandro (Istituto Nazionale di Fisica Nucleare); SARTI, Alessio (Sapienza University of Rome); MOSTACCI, Andrea (Sapienza University of Rome); DE GREGORIO, Angelica (Sapienza University of Rome); SPATARO, Bruno (Istituto Nazionale di Fisica Nucleare); DE ARCANGELIS, Daniele (Sapienza University of Rome); FRANCESCONI, Daniele (Sapienza University of Rome); ALESINI, David (Istituto Nazionale di Fisica Nucleare); BOSCO, Fabio (La Sapienza University of Rome); FRANCIOSINI, Gaia (Sapienza University of Rome); FICCADENTI, Luca (Sapienza University of Rome); GIULIANO, Lucia (Istituto Nazionale di Fisica Nucleare); PALUMBO, Luigi (Sapienza University of Rome); MAGI, Marco (Sapienza University of Rome); CARILLO, Martina (Sapienza University of Rome); MIGLIORATI, Mauro (Istituto Nazionale di Fisica Nucleare - Sez. Roma 1); PATERA, Vincenzo (Sapienza University of Rome)

Presenter: FAILLACE, Luigi (Istituto Nazionale di Fisica Nucleare)

Session Classification: Tuesday Poster Session

Track Classification: MC2: Photon Sources and Electron Accelerators: MC2.A08: Linear Accelerators