



Contribution ID: 994 Contribution code: THPR49

Type: **Poster Presentation**

Electronic brachytherapy replacement of iridium-192

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

The replacement of radionuclides used for cancer therapy with accelerators offers several advantages for both patients and medical staff. These include the elimination of: unwanted dose, specialized storage and transportation, and isotope production/replacement. Several electronic brachytherapy devices exist, and typically utilize an x-ray tube around 50 keV. These have primarily been used for skin cancer, though intraoperative applications are becoming possible. For several types of cancer, Iridium-192 has been the only brachytherapy treatment option, due to its high dose rate and 380 keV average energy. An accelerator-based alternative to Ir-192 has been developed, comprised of a 9.4 GHz, 1 MeV compact brazeless accelerator, narrow drift tube, and target. The accelerator is supported and positioned through the use of a robotic arm, allowing for remote delivery of radiation for internal cancer treatment. Preliminary results including dose rate and profile and plans for complete system demonstration will be presented.

Footnotes

Funding Agency

NNSA Identification No. 89233121CNA000209; US DOE Contract DE-SC0024395

Paper preparation format

LaTeX

Region represented

North America

Primary author: FREEMIRE, Ben (Euclid Beamlabs LLC)

Co-authors: JING, Chunguang (Argonne National Laboratory); POWER, John (Argonne National Laboratory)

Presenter: FREEMIRE, Ben (Euclid Beamlabs LLC)

Session Classification: Thursday Poster Session

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