Contribution ID: **2195** Contribution code: **THPM073** Type: **Poster Presentation**

Dual-scattering foil installation at CLEAR

Thursday, 11 May 2023 16:30 (2 hours)

The CLEAR facility at CERN allows users to receive an electron beam with energy up to 200 MeV, allowing flexibility in intensity, beam size and bunch structures. Separate from the main CERN accelerator complex, it is capable of hosting numerous experiments with rapid installations at two test stands.

It would be highly desirable for many applications, but particularly those of a medical nature, to be able to provide a 'flat'beam at CLEAR, with a uniform intensity distribution over a significant component of its transverse dimensions.

Over the winter shutdown 2022-2023, a dual-scattering system has been installed in the CLEAR beamline to generate such a beam distribution. It was placed several metres upstream of the beamline end to reduce X-ray contamination in the flattened beam and increase total transmission of the beam. Studies on the flattened beam composition in terms of structure and dose were carried out, utilising a dipole directly upstream of the in-air test stand to separate the electron and X-ray components for analysis.

Funding Agency

Footnotes

I have read and accept the Privacy Policy Statement

Yes

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Session Classification: Thursday Poster Session

Track Classification: MC8: Applications of Accelerators, Technology Transfer and Industrial Relations and Outreach: MC8.U01: Medical Applications