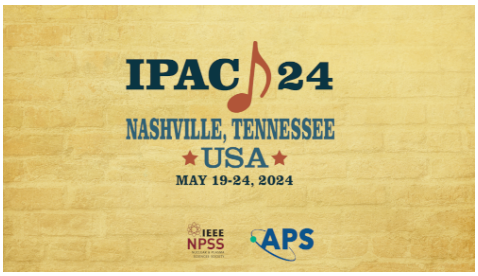

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Development of a multi-angle ultrahigh dose rate MV-level X-ray radiation system for FLASH radiotherapy clinical transformation

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

In this work, MAX FLASH system (Multi-Angle ultrahigh dose rate megavolt-level X-ray radiation system for FLASH radiotherapy) is presented. This system consists of a rapid RF power distribution network and five linacs vertically installed at different coplanar angles. The distribution network can switch all power to one terminal linac between pulses. Electron beams are accelerated to 10 MeV with more than 400 mA peak currents in the high-performance linac and then convert into X-ray at a compact rotating target. The system aims for a compact FLASH radiotherapy clinical facility with a gantry 3 meter in diameter and 2.5 meter in length, which can be installed in most of hospital radiotherapy treatment rooms. There is reserved space in the gantry for a coplanar CBCT to implement for image guidance. The gantry can rotate to an optimized angle for a better conformality before radiation while the system remains stationary and switches the operating linac during radiation. Construction of the first system prototype, with 40 Gy/s dose rate at 80 cm source-axis-distance, is supposed to be finished in the summer of 2024.

Footnotes

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Paper preparation format

Region represented

Asia

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