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A FLASH-RT experimental platform and technology research progress

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Compared with conventional radiation therapy, the toxic response of FLASH-RT dose rate is significantly reduced and the irradiation time is significantly shortened, and these advantages make FLASH-RT a hot spot in the current radiotherapy field. This paper investigates the development status of FLASH-RT at home and abroad, summarizes the challenges to achieve its clinicalization, and introduces a high-power linear accelerator converted into a Flash-RT experimental platform, with a brief introduction of its overall layout and the pulse modulator, microwave power source and microwave transmission system, control power cabinet, and circulating water cooling system. On the basis of the existing accelerator, the dosimetry is carried out by the detector, and the results show that the average dose rate reaches 60 Gy/s, which meets the requirement of the FLASH effect on the dose rate, and verifies the feasibility of generating the flash effect by this linear accelerator system.

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