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FLASH radiotherapy: from RF-based to laser plasma accelerators

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FLASH Therapy, an innovative technique in radiation therapy, has shown to dramatically spare normal tissue toxicities in multiple organs maintaining the efficiency as conventional irradiation to inhibit tumor growth. The therapy has been successfully tested using microsecond pulses of low energy electrons, using intrapulse dose rate in the range 106–107 Gy/s, time-averaged dose rate >100 Gy/s, and duty time < 100 ms. FLASH-RT has already translated to the clinic, yet the underlying radiobiological basis of the FLASH effect remains to be demonstrated. We will discuss the genesis of this methodology and its implementation based on different technologies, such as RF-based and Laser-plasma accelerators.

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