# Laser-driven electron acceleration for FLASH radiotherapy

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Experimental results on laser-driven electron acceleration obtained at CETAL-PW are presented. The emphasis is on quasi-monoenergetic electron beams with peak energies of interest for radiotherapy, i. e. electron energies in the range 150 – 250 MeV, called very high energy electrons (VHEE). VHEE have come into the spotlight for the medical community as an alternative technique of radiotherapy due to their deeper penetrating ability and reduced scattering (lateral spread) that allow the irradiation of deep-seated tumors [1-3].

CETAL-PW, (Romania) is hosting a Ti:Sa PW class laser (800 nm, 25 fs, 25 J, 0.1Hz) which has been recently used to accelerate electron beams with maximum energies up to ~ 500 MeV, by focusing the laser beam with an f/27 off-axis parabolic mirror (OAP) on supersonic gas jets of low-density He 99% - N2 1% mixture. Particular conditions, for which quasi-monoenergetic electron beams were obtained are presented [4], discussing their applicability for FLASH radiotherapy. Specifically, we aim at performing a correlation analysis between FLASH irradiation and dose-response effect on cancer and normal tissue cells in a tumor-on-chip microenvironment model.

**References**

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