

VHEE dosimetry research program at NPL

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Very high energy electrons (VHEE) have the potential of becoming an alternative modality in radiotherapy because of their improved dosimetric properties compared with conventional radiotherapy photons generated by clinical linear accelerators. VHEE beams have characteristics unlike any other beams currently used for radiotherapy: femtosecond to picosecond duration electron bunches, which leads to very high dose per pulse, and energies that exceed that currently used in clinical applications. Dosimetry with conventional online detectors, such as ionization chambers or diodes face a challenge due to non-negligible ion recombination effects taking place in the sensitive volumes of these detectors. Lack of standards and reference conditions in dosimetry hampers quick advances in VHEE radiotherapy research. The ongoing VHEE research program at the National Physical Laboratory will be discussed.