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Source terms for the HED science in short-pulse experiments with solid target, and further perspectives

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In the facilities dedicated to the investigation of the matter under extreme conditions, without production of accelerated proton/ion or electron beams, the radiation protection assessment is primarily driven by the electron dynamics in the plasma. In the case of ultra-short relativistic laser pulses hitting a solid target, the radiation source term is given by the electrons escaping from the sheath field in the target, coupled with the pure Bremsstrahlung produced by the electrons recirculating within the sheath field. At the Helmholtz-Zentrum Dresden-Rossendorf, after a previous simulation and experimental work (presented at SATIF-15) done to characterize the pure Bremsstrahlung component, the developed radiation concept has been applied to assess the radiation protection for the next generation of experiments at the HED Instrument at the European XFEL.

Scientific Topic 1

Scientific Topic 2

Scientific Topic 3

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Scientific Topic 8

Beam-plasma and laser-plasma interactions and acceleration

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