

# Radiation generation in high power laser applications

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Lasers with femtosecond pulse durations have become readily available and are used in numerous applications from material processing to plasma-based accelerators. Often, the lasers are focused to small spot sizes, exceeding intensities of  $10^{13}$  W/cm<sup>2</sup> and thus the ionization threshold in most materials. As this can lead to the production of x-rays, national law in Germany made it mandatory to monitor the dose rate if this intensity threshold is exceeded. At Deutsches Elektronen-Synchrotron DESY, research has now started to further investigate and understand the production of x-rays in different materials or gases to enable safe working conditions and compliance with the legal framework while maintaining the flexible workflow required at universities and research institutes. This poster gives an overview of existing research on this topic, shows plans for the research at DESY and invites to discuss implications for future work in the development of plasma accelerators.

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