

Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Bremsstrahlung efficiency in ultrahigh intensity laser-solid interactions with thin foil targets¹ STUART MORRIS, CHRISTOPHER RIDGERS, York Plasma Institute, University of York — Non-linear Compton scatter (NCS) and bremsstrahlung radiation are responsible for the generation of X-rays in laser-solid interactions. While it is expected that NCS will efficiently produce X-rays for next generation lasers, the weaker NCS signals from laser-solid interactions in existing facilities have not yet been observed due to the bremsstrahlung background. This work derives a quantitative description of the bremsstrahlung efficiency in interactions between ultrahigh intensity short pulse lasers, and thin foil targets. This model was tested against simulations from the particle-in-cell code EPOCH, which has been extended to include bremsstrahlung modelling capabilities. The relative efficiencies of bremsstrahlung and NCS have been compared to seek NCS signatures which may be observed experimentally.

¹Funded jointly by EPSRC and AWE

Stuart Morris
York Plasma Institute, University of York

Date submitted: 01 Jul 2019

Electronic form version 1.4