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Pair plasma formation in the interaction of a thin plasma with ultra-intense counter-propagating lasers CODY SLADE-LOWTHER, University of York — Next-generation lasers (e.g. ELI) expect to reach peak intensities of $\sim 10^{23}$ Wcm^{-2}. At such intensities, the electromagnetic field strength is sufficient for non-linear Quantum Electrodynamics effects to become important. The processes of non-linear Compton scattering and Breit-Wheeler Pair production become likely at intensities $\geq 10^{23}$ Wcm^{-2}, and have been predicted to lead to prolific pair and γ-ray production via electromagnetic cascades. We present results for the case of two counter-propagating circularly- polarized lasers of intensity $I \in [10^{23}, 10^{25}]$ Wcm^{24} interacting with a plasma of initial density $n_0 \in [10^{25}, 10^{35}]$ via the Monte-Carlo- particle-in-cell code EPOCH. We show the maximum pair plasma density in I vs n_0 space. We further discuss the variation within this space on the plasma characteristics, including laser absorption and field-particle energy distribution.

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