

Abstract Submitted
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Self-consistent PIC Simulations of Neutron Generation from Intense Laser-plasma Interactions¹ MARTIN LINDSEY, JASON CHOU, Stanford University, PAULO ALVES, SIEGFRIED GLENZER, FEDERICO FIUZA, SLAC National Accelerator Laboratory — High intensity laser-plasma interactions have the potential to produce bright, compact neutron sources. Recent experiments using a deuterium jet have demonstrated the generation of up to 10^{10} neutrons per shot, but the details of the laser-plasma interactions and deuteron heating are not yet understood. We have followed a Direct Simulation Monte Carlo (DSMC) approach to model fusion reactions self-consistently in PIC codes, inspired by the methods used for Coulomb collisions. This module has been implemented and tested in the OSIRIS PIC code. We will discuss the implementation options and validity tests and will present results from novel simulations of neutron generation in the interaction of intense lasers with deuterium jets.

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