

Abstract Submitted
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Electron-Positron Pair Production in Relativistic Laser-Matter Interactions¹ JACKSON WILLIAMS, UC Davis, LLNL, HUI CHEN, LLNL, JAE-BUM PARK, UC Davis, LLNL, RICCARDO TOMMASINI, LLNL — Ultraintense lasers have been shown to produce large quantities of positrons in a short burst, forming electron-positron pair plasmas, which are analog systems for large-scale astrophysical events such as gamma ray bursts, active galactic nuclei, and black holes. Understanding the pair production mechanisms, and their dependencies to laser and target parameters, is critical to designing and reconstructing astrophysical phenomenon in the laboratory. We have performed preliminary experiments to explore the dominant pair production mechanisms for a range of experimental conditions using the Omega EP laser at the University of Rochester. The Monte Carlo code Geant4 was used to analyze and support experimental evidence. This talk will present the experimental and simulation results.

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