

Abstract Submitted  
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**Measuring gamma ray production from laser-produced pair plasmas**<sup>1</sup> G. JACKSON WILLIAMS, HUI CHEN, JAEBUM PARK, Lawrence Livermore National Laboratory, JOHN SEELY, Artep, Inc., RICCARDO TOMMASINI, Lawrence Livermore National Laboratory — Ultraintense lasers have been shown to produce large quantities of positrons in a short burst, forming an electron-positron pair plasma. Outside the laboratory, these plasmas are only found in energetic astrophysical events such as gamma ray bursts, active galactic nuclei, and black holes. Due to the low fluences from these interstellar phenomenon, however, direct observations of the annihilation events are difficult and many properties are still unknown. We have constructed and tested laser-plasma diagnostics to perform the first measurement of annihilation radiation from laser-produced pair plasmas. This talk will present experimental and simulation results from this effort and their implications for laboratory pair plasmas in the understanding of astrophysical events.

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