

Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

NIF science experiments on relativistic electron-positron plasma creation HUI CHEN, Lawrence Livermore National Lab, NIF PAIR-PLASMA SCIENCE EXPERIMENT COLLABORATION — High-flux jets of relativistic positrons with temperatures of MeV have recently been produced in experiments at 100-1000 J high-intensity laser facilities at LLNL and LLE. The pair parameters have been found to scale up with the input laser energies. We will perform an NIF science experiment to create high-density relativistic pair plasmas using the multi-kilojoule NIF ARC laser. It is expected that using multi-kilojoule, short-pulse lasers like Omega EP, Gekko LFEX and NIF ARC and advanced target designs, such experiments can create the first relativistic high-density pair plasmas in the laboratory - a completely novel system enabling detailed study of some of the most exotic and energetic systems in the universe. *This work performed under the auspices of the U.S. DOE by LLNL under Contract DE-AC52-07NA27344.

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Date submitted: 26 Jul 2011

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