

Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Laser Compton Cooling of Relativistic Electron and Positron Beams and Pair Plasmas¹ EDISON LIANG, ERIN DAHLSTROM, Rice University — With the advance of high energy intense lasers, it becomes conceivable to use photons to slow down relativistic electron and positron beams, or rapidly cool a relativistic electron-positron pair plasma. Here we present results from the Monte Carlo simulations of the Compton cooling of relativistic electrons and positrons using intense lasers of one micron wavelength. We find that several hundred kJ to a MJ of laser energy is sufficient to Compton cool multi-MeV electrons/positrons down to keV energies and below. We also explore the use of resonant Compton cooling in a strong magnetic field (100 MG and above). Preliminary results using Doppler shifted laser light look promising.

¹Research supported by NSF-AST0909167 and DOE-SC-000-1481.

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Date submitted: 13 Jul 2010

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