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Hot Electron and Gamma-Ray Production using the Texas Petawatt Laser irradiating Thick Gold Targets EDISON LIANG, Rice University, GILLISS DYER, University of Texas at Austin, DAVID TAYLOR, TAYLOR CLARKE, ALEXANDER HENDERSON, XIN WANG, Rice University, NATHAN RILEY, KRISTINA SERRATTO, University of Texas at Austin, PETR SHAGIN, Rice University, TODD DITMIRE, University of Texas at Austin — We report preliminary experimental results of using the Texas Petawatt laser (TPW) to create relativistic hot electrons and bremsstrahlung gamma-rays by irradiating thick gold targets. Using the f/3 focus in the TC1 target chamber, we focussed TPW to peak intensities of 10^{19} to 10^{20} W/cm^2. Results were obtained for gold targets of thicknesses ranging from 1mm to 4 mm. We measured the hot electron and bremsstrahlung gamma-ray spectra in both the front and back of the target. Hot electrons with energies exceeding several tens of MeV were detected. We also measured the gamma-ray angular distribution. This work was supported by DOE grant DE-SC-000-1481.

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