

Abstract Submitted  
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**Experimental determination of peak laser intensity via relativistic Thomson scattering**<sup>1</sup> ANDREW LONGMAN, University of Alberta, CALVIN HE, University of Maryland, College Park, JOSE ANTONIO PEREZ-HERNANDEZ, LUIS ROSO, Centro de Laseres Pulsados, ROBERT FEDOSEJEVS, University of Alberta, WENDELL HILL, University of Maryland, College Park — In this work, we report on the development of a high-power laser intensity diagnostic capable of determining the peak laser intensity in-situ based on relativistic Thomson scattering. Electrons ionized in a low-pressure gas at the laser focus are injected into the peak laser intensity via barrier suppression ionization and the radiation emitted by the electrons oscillating relativistically in the laser focus produces harmonic emission with characteristic spatial and spectral signatures dependant on the laser intensity. Advanced simulations of the interactions will be presented and compared to an initial experimental study in which an intensity of  $6E18Wcm^{-2}$  was directly measured based on spectral scattering measurements using the 200TW VEGA laser at CLPU in Salamanca, Spain. Future studies will focus on measuring both the spatial and spectral signatures of relativistic Thomson scattering to obtain an accurate in-situ measurement of the peak laser intensity.

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