

Abstract Submitted  
for the DPP08 Meeting of  
The American Physical Society

**Relativistic Electrons from Slab Targets Interacting Strongly with Intense Light in Vacuum from High-Contrast Laser Pulses**<sup>1</sup> TUDOR JOHNSTON, L. NIKOLIC<sup>2</sup>, Y. TYSHETSKIY<sup>3</sup>, F. VIDAL, INRS-EMT, Varennes, QC, Canada — When light of electron-relativistic intensity in several-cycle laser pulses are obliquely incident on slab targets with extremely low pre-pulse energy, copious amounts of high laser harmonic light emerge [1] (See also ongoing work at the ALLS 200 TW Ti-Saph laser at INRS EMT. (Pulses are 24 fs at 10 Hz with 10-10 contrast, even without plasma mirrors.) 2-D PIC (OSIRIS code at INRS) simulations [2] (and earlier work by Naumova et al. [3] have shown that intense beams of electrons are not only injected into the target [2] but that significant relativistic electrons are also emitted more or less along with the emitted light. These frontally-emitted relativistic electrons emerge from the narrow regions of intense current responsible for the harmonics [2] and interact strongly with the incident and emitted light. [1] B. Dromey et al Nature Phys. Lett., 2, 456-459 (2006). [2] T. Johnston et al. Poster YP8 48, Bull. Amer. Phys. Soc 52, 16 November (2007). [3] N. Naumova, et al., Phys. Rev. Lett. 93, 195003 (2004).

<sup>1</sup>Supported by NSERC, Canada.

<sup>2</sup>Now at Univ. Alberta, AL, Canada

<sup>3</sup>Now at Univ. Sydney, NSW, Australia

Tudor Johnston  
APS

Date submitted: 17 Jul 2008

Electronic form version 1.4