

Abstract Submitted
for the 4CF12 Meeting of
The American Physical Society

Photoemission by Large Electron Wave Packets in a Relativistic Laser Focus CALEB COBURN, ERIC CUNNINGHAM, MICHAEL WARE, JUSTIN PEATROSS, BYU Physics — We measure the radiation emitted from an electron whose wave packet has a size comparable to the wavelength of a driving laser. Such electrons are naturally produced during the ionization process in a high-intensity laser focus, where the sharp field gradients force portions of the wave packet over a large area. Using semi-classical quantum theory it is predicted that photoemission will be strongly suppressed as the wave packet size increases. However, fully quantized quantum theory predicts that radiation should be independent of the wave packet size. In this experimental work, we seek to confirm this fully quantized prediction by direct observation. We present our experimental design and noise floor results.

Caleb Coburn
BYU Physics

Date submitted: 24 Sep 2012

Electronic form version 1.4