

Abstract Submitted
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Does Wave-Packet Spreading Influence Light Scattering from Free Electrons in an Intense Laser Field? JUSTIN PEATROSS, Brigham Young University — Arguments are presented against treating electron quantum probability current as a classical current distribution for purposes of computing light emission. This procedure, apparently widely accepted within the high-intensity laser community, leads to the startling prediction that light scattered from a free electron quickly diminishes when the electron wave packet spreads to the scale of the driving-field wavelength. One draws the absurd conclusion that a single electron phase-matches (and phase-mismatches) with itself when emitting light. This question can be put to the test: The outcome of this dispute dramatically impacts the amount of light expected to scatter out the side of a relativistic laser beam.

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