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Comparing Particle-in-Cell QED Models for High-Intensity Laser-Plasma Interactions[1] SCOTT V. LUEDTKE, LANCE A. LABUN, BJÖRN MANUEL HEGELICH, Univ of Texas, Austin — High-intensity lasers, such as the Texas Petawatt, are pushing into new regimes of laser-matter interaction, requiring continuing improvement and inclusion of new physics effects in computer simulations. Experiments at the Texas Petawatt are reaching intensity regimes where new physics—quantum electrodynamics (QED) corrections to otherwise classical plasma dynamics—becomes important. We have two particle-in-cell (PIC) codes with different QED implementations. We review the theory of photon emission in QED-strong fields, and cover the differing PIC implementations. We show predictions from the two codes and compare with ongoing experiments.

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