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Sauter-Schwinger Effect for Colliding Laser Pulses

In ultra-strong electric fields energy can be converted into electrons and positrons. We introduce a novel approach to calculate the mean particle number in collisions of short-pulsed laser fields. In this regard, we further discuss the different regimes of pair production in terms of their unique signatures in particle phase-space and identify the relevant time scales regarding particle formation within and beyond perturbation theory.

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