

QED effects in realistic laser fields

I. Sokolov

U. of Michigan, Ann Arbor

The emission from an electron in the field of a relativistically strong laser pulse is analyzed. At pulse intensities of $J \geq 2 \cdot 10^{22}$ W/cm² the emission from counter-propagating electrons is modified by the effects of Quantum ElectroDynamics (QED), as long as the electron energy is sufficiently high: $\mathcal{E} \geq 1$ GeV. The radiation force experienced by an electron is for the first time derived from the QED principles and its applicability range is extended towards the QED-strong fields.