Quasiclassical results for two-photon Coulomb Bremstrahlung[1] A.
A. KRYLOVETSKY, N. L. MANAKOV, S. I. MARMO, Voronezh State University, Russia — Stimulated two-photon Bremsstrahlung (2BrS) is investigated at the
scattering of quasiclassical electrons ($Ze^2/\hbar v \gg 1$, v is the electron velocity) from
a Coulomb center of charge Ze in the presence of a monochromatic light wave of
frequency ω. Despite one-photon Bremsstrahlung process, the cross section of 2BrS
cannot be found within the framework of classical electrodynamics and one has been
obtained as a limit $\hbar \to 0$ in exact quantum results. The quasiclassical 2BrS amplitude is expressed in terms of integrals of McDonald functions $K_{2i\xi}$ dependent
on the dimensionless "classical" frequency $\xi = Ze^2\omega/mv^3$ and the scattering angle
θ. Simple analytical results for differential and total cross sections of 2BrS at low
($\xi \ll 1$) and high ($\xi \gg 1$) frequencies are obtained and comparisons with existing approximate results are presented. Photon polarization dependence of the 2BrS cross
section is investigated and it is found that the *elliptic dichroism* effect vanishes, but
the *circular dichroism* is kept even in the quasiclassical limit. Quasiclassical results
for *spontaneous* emission of two BrS photons (having different frequencies) are also
discussed.

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