

Abstract:

A high-frequency sum-rule expansion is derived for the transverse elements of the relativistic classical plasma dielectric tensor in an isotropic system. The relativistic results are different from the nonrelativistic ones by a factor of $\langle \gamma^{-1}(1 - v^2/3c^2) \rangle$ for $\Omega \gg \mu\nu(k)$ and longitudinal plasmon and transverse photon frequencies, and by $\langle \gamma^{-2}(1 - 2v^2/3c^2) \rangle$ for $\Omega \gg \mu\nu(k)$.