



Physics > Plasma Physics

Dressed test particles, oscillation centres and pseudo-orbits

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A general semi-analytical method for accurate and efficient numerical calculation of the dielectrically screened ("dressed") potential around a non-relativistic test particle moving in an isotropic, collisionless, unmagnetised plasma is presented. The method requires no approximations and is illustrated using results calculated for two cases taken from the MSc thesis of the first author: test particles with velocities above and below the ion sound speed in plasmas with Maxwellian ions and warm electrons. The idea that the fluctuation spectrum of a plasma can be described as a superposition of the fields around \emph{non-interacting} dressed test particles is an expression of the quasiparticle concept, which has also been expressed in the development of the oscillation-centre and pseudo-orbit formalisms.

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