

RESPONSE OF ELECTRONIC SURFACE IN METAL CLUSTERS WITHIN A PHASE SPACE APPROACH

V.I. Abrosimov, V.M. Kolomietz, V.A. Plujko

The surface vibrations of the valence electrons in spherical alkali-metal clusters are studied within a phase space approach which is based on the Landau-Vlasov kinetic equation. The linear response theory is used. The proposed method allows for the analysis of the contribution of the electron orbits with different angular momentum into the strength function. The strength function for the electronic surface vibrations is investigated. Applications to the dipole collective excitations in sodium clusters are presented. We reproduce both the surface and volume branches of the dipole resonance. The analysis is carried out for the electron-electron collision integral taking into account the retardation effects. Enhancement of the two-electrons scattering rate in two orders of magnitude due to the memory effects is shown.