

Large amplitude ion acoustic double layers in warm negative ion plasmas.

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Abstract: In this paper we have presented ion acoustic double layers (IADLs) in multicomponent plasma containing hot negative and positive ions with Maxwellians electrons distribution. We have studied the characteristics and occurrence of IADLs in negative ions plasmas employing Sagdeev pseudo potential technique. We have investigated the dependence of different parameters on the characteristic of double layers. It is investigated that the positive (compressive) and negative (rarefactive) potential double layers are simultaneously exist in system. It is analysed that by increasing the negative ions decreases the minimum Mach number at fix temperature (σ_1 and σ_2). The effect of ions temperature ratio (σ_1 and σ_2) and negative ion concentration (α) on the double layers are discussed in detail. The present model is applied to study the large amplitude IADLs in the plasmas containing (H^+ , H^-), (Ar^+ , F^-), (CS^+ , Cl^-) and (Xe^+ , F^-). This investigation may be helpful to understand the double layers in laboratory and space plasma, where negative ions are present with thermal electrons.

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