Ion-acoustic waves in unmagnetised plasmas with positrons and hot and cold superthermal electrons

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Using the pseudo-potential method, the large amplitude of ion-acoustic double layers in plasma consisting of ions, positrons and cold and hot superthermal electrons. It is found that compressive double layers exist in the plasma system for selected set of plasma parameters. The effect of the spectral indexes of hot electrons, spectral indexes of cold electrons, temperature ratio of two species of electron, positron concentration, ionic temperature ratio, positron temperature ratio and Mach number on the characteristics of the large amplitude ion-acoustic double layers are discussed in detail. The present study of this paper may be helpful in space and astrophysical plasma system where positrons and superthermal electrons are present.

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