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Ion-acoustic Solitary wave in superthermal plasmas with two electron temperature distribution

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Ion-acoustic solitary wave in a plasma consisting of ions, positrons and superthermal electrons are studied. Using the reductive perturbation method (RPM), Korteweg de Vries (KdV) and modified KdV (mKdV) equation are derived. Effect of the positrons concentrations, spectral index and ionic temperature ratio on amplitude and width of the ion acoustic solitary waves have been studied.

The amplitude of the ion acoustic solitary waves increases with increasing in positron concentrations and decreases with increasing the ionic temperature ratio.K The width of the ion acoustic solitary waves decreases with increasing in positron concentrations and increases with increasing the ionic temperature ratio for a given set of parameters.