عنوان مقاله:

Some Models in Unmagnetized Plasma involving Kaniadakis Distributed Electrons and Temperature Ratio : Dust Ion Acoustic Solitary Waves

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خلاصه مقاله:

The current paper studies the influence of the temperature ratio of ion-to-electron α, dust concentration μ, and κ- deformed parameter on dust ion acoustic solitary waves in an unmagnetized plasma with Kaniadakis distributed electrons. More precisely, the reductive perturbation technique is utilized to extract the Korteweg-de Vries and modified Korteweg-de Vries equations. Both compressive and rarefactive Korteweg-de Vries solitons are found to exist in the ranges $۰ < \mu \leq ۰.۶۷۷$ and $۰.۶۷۷ < \mu < ۱$, respectively, and only compressive modified Korteweg-de Vries solitons in the range $۰ < \mu \leq ۰.۱۱$. In an unmagnetized plasma with Kaniadakis distributed electrons, the influence of the ion-to-electron temperature ratio on dust ion acoustic solitary waves can have several fascinating applications and consequences in plasma physics and astrophysics.

کلمات کلیدی:

Unmagnetized plasma, Kaniadakis distributed, KdV, mKdV, Compressive and rarefactive solitons