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Ion-acoustic solitons in multi-components dusty plasmas AMANDEEP SINGH BAINS, TARSEM SINGH GILL, Department of Physics, Guru Nanak Dev University, Amritsar 143005 — We have considered a hot dusty plasma system containing ions, electrons, positrons and negatively charged dust to study the solitary potential structures. Using reductive perturbation method, the Kadomtsev–Petviashvili (KP) equation has been derived. We have studied the characteristics of ion-acoustic solitary waves associated with negative/positive potential. The nonlinearity and dispersion coefficients are the function of positron to electron density ratio, dust density parameter, ion temperature and ratio of positron to electron temperature. It is observed that the amplitude and width of the solitary potential structures change with the variation of these parameters. We have explored the parametric regime for which the different type of negative/positive solitary potential structures exists.

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