



4th Asia-Pacific Conference on Plasma Physics, 26-31 Oct, 2020, Remote e-conference

Solitary waves in a multi-ion plasma with kappa described electrons

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We have investigated the ion acoustic solitary waves in a multi-ion cometary plasma composed of positively and negatively charged heavier ions, hydrogen ions and hotter and colder electrons. Both the electrons are modelled by kappa distribution function. The reductive perturbation technique is used to derive non linear equation and solution is plotted for different physical variables relevant to comet Halley. From the plots it is found that physical variables have profound influence on the amplitude and width of the solitary waves.