Ion-Acoustic Double Layers in a Non-Thermal Electronegative Magnetized Plasma

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Abstract : Ion-acoustic double layers have been studied in magnetized plasma. The modified Korteweg-de Vries (m-KdV) equation using reductive perturbation method is derived. It is found that for the selected set of parameters, the system supports rarefactive double layers depending upon the value of nonthermal parameters. It is also found that the magnetization affects only the width of the double layer. For a given set of parameter values, increases in the magnetization and the obliqueness angle (θ) between wave vector and magnetic field, affect the width of the double layers, however the amplitude of the double layers have no effect. An increase in the values of nonthermal parameter decreases the amplitude of the rarefactive double layer. The effect of the ion temperature ratio on the amplitude and width of the double layers are also discussed in detail.