

Ion-acoustic double layers in magnetized plasmas with superthermal electrons and positrons

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Ion-acoustic double layers has been studied in magnetized plasma with presence of superthermal electrons and positrons. In this investigation, we have derived the modified Korteweg-de Vries equation with using the reductive perturbation method . We have calculated the phase velocity, amplitude and width of compressive and rarefactive ion-acoustic double layers for certain set of parameters. We found that magnetization of plasma affect the width of ion-acoustic double layers but not the amplitude. Our present investigation may be helpful to understand the double layers in astrophysical environments where superthermal electrons and positrons are present.

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