

Abstract

In this thesis, first, we derived the dispersion relation for the non-linear ion acoustic wave in spin polarized e-i and epi-plasmas by using Sagdeev potential. Thomas Fermi law could be employed to express the positron as well as electron, on the contrary, for the ions, imaginary hydrodynamics fluid equation had been used. There we show graphs of different parameters α , β , η and M on the linear and nonlinear ion acoustic wave which is an important factor. It is noted that ion acoustic speed depends on the concentration of the positrons. It is noted that spin polarization enhances both the amplitude and depth of the Sagdeev potential. And it is noted that the role of positrons and ions of Sagdeev potential in spin polarized plasma will be valid and contribution of positrons is pre-dominant on ion as at a very small positron concentration (i.e., large ion concentrations) in plasma and vice versa. Comparison between e-i and epi-plasma, and comparison of epi plasma with and without spin polarization observed.