Abstract

In this thesis, we have studied the Alfvenic double layer in two temperature non extensive electrons which consists of cold and hot electrons and singly charged ions. Double layers and Parallel electric fields play a significant role in both space and laboratory plasmas, contributing to various plasma phenomena and processes as energy transfer and particle acceleration and magnetospheric interaction. These parallel electric field structures having field aligned potential drop have been reported to occur naturally in variety of space plasma environments such as Auroral zone, Plasma sheet and solar wind etc. We have employed fluid model and used two potential theory. From linear dispersion relation, we found that by increasing population of hot electrons, frequency increases both for fast and slow mode. Also from normalized set of system fluid equation, by using nonlinear analysis we derived the Sagdeev potential equation and get the solution for Alfvenic double layers. Existence regimes of these double layers have been plotted showing the range of Alfvenic Mach number for different obliqueness.