

Ion Beam Driven Compressional Alfvén Wave in Dusty Plasma

Ruby Gupta

*Department of Physics, Swami Shraddhanand College,
University of Delhi, Alipur, Delhi-110 036, India
E-mail: rubyssndu@gmail.com*

Abstract—*The dispersion characteristics of Alfvén waves propagating perpendicular to the ambient magnetic field are discussed, taking into account the effects of the charged dust particles present in the interplanetary medium. The dispersion relation for Alfvén mode is numerically solved and the solutions are compared with particular situations where either the dust grains are absent or the beam is absent. It is shown that the presence of both the charged dust grains and the beam ions modify the dispersion relation of low frequency Alfvén waves. An increase in the dust population enhances the growth rate of the Alfvén wave instability through the effect of capturing electrons.*

Keywords: *Alfvén, frequency, dispersion, growth rate, Cerenkov.*