

# Abstract

In this thesis, we have derived the non-linear single order differential equation in terms of magnetic field is develop for the solitary wave trains. The solution of the differential equation is written in terms of Jacobi-elliptic functions. We plot Sagdeev pseudo potential as a function of magnetic field that ensures the range of solitary wave trains from  $B_{min}$   $B_m$  to  $B_{max}$   $B_M$ . Others amplitude solutions like parallel velocity. Transverse velocity and electric field are also expressed in term of Langrangian parameters  $\tau$ . Results are analyzed for different value of mach range.