Effect of Beam Velocity on Firehose instability in Earth's Megneto-Plasma with General Loss Cone Distribution Function

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**Abstract.** The effects of upgoing ion/electron beams [1] on growth rate and growth length of the firehose =-instability in low beta homogeneous plasma, are discussed by applying kinetic theory and using general loss cone distribution function. It is found that the effect of the upgoing ion beam is to reduce the energy of transversely heated ions, whereas the thermal anisotropy acts as a source of free energy to start and enhances the growth rate of the instability. It is found that the firehose instability occur by extracting the energy of perpendicularly heated ions in the presence of the up flowing ion beams in the anisotropic magneto-plasma. The results are interpreted for the firehose instability in the auroral acceleration region [1, 2].The findings may be checked and then applied in dusty and multi component space plasma also.

References:

[1] Ahirwar G, Varma P and Tiwari M *Ann. Geophys*. **25** 557–568

[2] Dwivedi A K, Varma P and Tiwari M S 2002 *Planetary and Space Science*  **50** 93–99