

## Anomalous Propagation of VLF Waves at Low Latitudes

Ashok Kumar Singh(1), Lalmani(2), R. P. Singh(3)

1. Department of Physics, Bundelkhand University, Jhansi, India, 284128
2. Department of Physics, National Institute of Technology, Srinagar, Camp-Jammu, Old University Campus, Jammu, India.
3. Department of Physics, Banaras Hindu University, Varanasi, India 221 005

In this paper, we shall present some observations of whistlers recorded at low latitude Inidan stations which do not follow the usual dispersion obtained from whistler mode propagation along the dipolar geomagnetic field lines. During the routine analysis of whistler waves using matched filtering and parameter estimation technique, we found few whistlers to have dispersion between 3 and 13  $\text{sec}^{1/2}$  and corresponding L value between 2.1 and 4.8. The L value of the Varanasi is 1.07 and the corresponding dispersion value under normal condition is  $\sim 12 \text{ sec}^{1/2}$ . As L value increases, path of propagation increases and hence dispersion value also increases. Similarly, the analysis of Jammu data showed that few whistlers have anomalous results. The dispersion value lied between 23 and 38  $\text{sec}^{1/2}$ , whereas corresponding L value is in the range 3.4- 4.2. In the normal situation whistlers propagating along this paths should have dispersion values in the range 60-80  $\text{sec}^{1/2}$ . This anomalous relation between the path of propagation and dispersion shows the complexity of the propagation mechanism. It is suggested that propagation mechanism should be worked out including the effect of geomagnetic curvature, inhomogeneity in the magnetic field, plasma density and plasma temperature.