

Line Splitting in Schumann resonance from the recorded data

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Abstract

Line splitting occurs in the spectrum of Schumann resonance, recorded near Kolkata (lat: 22.56° N, long: 88.5° E) since 1999 using multiple loop antenna system. The recorded ELF data has been analyzed through power spectrum analysis by means of Fourier transform and also by Z transform technique.

Splitting isolates individual peaks in the spectral line and introduces observable modifications of the field distribution, depending on frequency.

Within the Earth-ionosphere cavity, various asymmetries arise from numerous reasoning. The oscillations within the cavity are associated with the degeneracy of the eigen-values due to which for a single eigen-value, giving the resonance frequency, covers different eigen functions.

In the spectra of Schumann resonance, respective magnitude of the splitting is comparable to the inherent width of the lines themselves. For these difficulties, different techniques of spectral analysis are adopted to resolve the closely spaced lines. In this presentation, the Z transform technique mainly has been applied to investigate the line splitting of the different recorded modes of the Schumann resonance spectra.