

Excitation of Pc1-3 waves in the magnetosphere by external shear flows

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We present how Pc1-3 wave occurrences are affected by external sources in the magnetosheath. The Doppler shift motion of disturbances in the magnetosheath can continuously generate relatively high frequency component of ULF waves, which includes EMIC band. By adopting a theoretical technique of invariant imbedding method(IIM), it is shown how the solar wind and the IMF control the EMIC activities as well as Pc 1-3 wave occurrences. Our results are found to be very consistent with the observational feature of current statistical studies of EMIC wave events such that dominant occurrences are found at the outer shells, and that there is strong asymmetric distribution between dawn and dusk. In addition, our results are also consistent with Pc2-3 occurrences in the low-latitude ground stations and their relationship with the solar wind speed.

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