

Propagation of wave packets of whistler-mode chorus measured by the Cluster spacecraft

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Whistler-mode chorus is generated by a nonlinear mechanism involving wave-particle interactions with energetic electrons. Close to its source region, chorus is often divided into two frequency bands. They are separated by a gap at about one half of electron cyclotron frequency. Chorus typically has a discrete structure of separate wave packets in a frequency range from a few hundreds of Hz to several kHz. We investigate these wave packets from detailed time-frequency power spectrograms and waveforms measured by the WBD instrument on board the four Cluster spacecraft. We analyze chorus wave packets as a function of the relative position of the observation point inside the generation region and also as a function of the direction of the component of the Poynting vector parallel to the local magnetic field.