

Kilometric Continuum and its Relation with Geomagnetic Activities

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Kilometric continuum found by Geotail has a frequency range from 100 to 800 kHz and is the high frequency extension of the escaping continuum [1]. It is observed more frequently near the magnetic equator and appeared to be unrelated with magnetic activity. Its source is expected to be inside of the plasmopause and the topside equatorial region. Recently IMAGE Radio Plasma Imager (RPI) and Extreme ultraviolet (EUV) have found that some kilometric continuum is generated at the plasmopause, in or near the magnetic equator, within a bite-out region [2] and have confirmed the expectation. Within the bite-out structure the flux tubes have much less density than their adjacent flux tubes. Other kilometric radiation may be generated at steep density gradients inside the plasmopause as observed by Akebono and CRRES. According to recent data observed around 2000 and 2001, the occurrence probability of kilometric continuum becomes higher when Kp is higher than 6.

It should be noted that is observed even if Kp is zero. Its relation with geomagnetic activities when Kp is very high or low will be examined.

References: [1] K. Hashimoto, W. Calvert, and H. Matsumoto, Kilometric continuum detected by Geotail, JGR, 104, 28,645, 1999. [2] J. L. Green et al., On the origin of kilometric continuum, JGR, VOL. 107, NO. A7, 10.1029/2001JA000193, 2002.