

A coherent modulation of pulsating aurora at Pc5 frequency

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Ground and satellite magnetometer observations and all-sky video images revealed that the Pc5 pulsations that occurred in 17 January 1994 showed a wide distribution in longitude from Alaska, USA (0 MLT) to the Hudson bay, Canada (11 MLT) and in latitudes from 62N (L=4.5) to 70N (L=8.5).

Auroras in all-sky image were composed of field line resonance (FLR) in higher latitudes in 67-70N and pulsating aurora (PsA) in lower latitudes in 62-67N.

It is found that the PsA, FLR, and field magnitude at the geosynchronous altitudes were all oscillated coherently at Pc5 periodicities.

We conclude that the coherent modulation of FLR and PsA are attributable to toroidally and poloidally polarized Pc5 pulsations, respectively, generated by the polarization splitting of the Alfvén spectrum by the finite plasma pressures.(1), (2).

References

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