FREQUENCY-TIME ANALYSIS ON GEOMAGNETIC ULF DISTURBANCES DURING MAGNETIC STORM IN MARCH 1989

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The Wigner distribution has been introduced to investigate the continuing frequency variations of geomagnetic disturbances for dynamic spectrum analyzing the geomagnetic data. With the software package in MATLAB, the frequency variations of geomagnetic disturbance in ULF band during geomagnetic storm in middle latitude region have been studied, using of ground-based observations by magnetometer at stations of the 120˚E meridian chain. The wholly figure of frequency variations from 1 to8 mHz band during the geomagnetic storm are given. It seems support the suggestion that during the initial phase and the main phase the frequency of geomagnetic Pc5 declines gradually, and increases in the recovery phase. And the discrete frequencies could be found in the main phase and recovery phase. Combining the analysis to Dst and other geomagnetic index, it will be helpful to distinguish the different types of origin and variation mechanism of geomagnetic ULF disturbance.

Keywords: geomagnetic storm, Wigner distribution, ULF disturbance, 120˚E meridian chain