

Substorm Injection に関連する静止軌道での Pi2 帯域振動

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Characteristics of Pi2 activities at geosynchronous altitudes during dispersionless injections

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We performed superposed epoch analyses of magnetic fields at geosynchronous altitudes in intervals of 40 min beginning 10 min before the dispersionless proton injection timed by Pi2 onset. The overall characteristics of the magnetic field variations were consistent with the formation of substorm current wedge, except for 10 min after the onset where compressive Pi2 activities were enhanced and field magnitudes were reduced. It is suggested that the 10 min interval could be considered as transient state of the magnetosphere characterized by oscillations of region2 type field-aligned current pair. We found that upward currents were localized at eastern border of the proton injection, while downward currents were distributed throughout in the pre-midnight sector. A sharp pressure gradient formed at post-midnight sector by the dispersionless injection caused the current localization.

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Pi2 の最初の波頭を Substorm injection の基準として、静止軌道上の磁場およびプラズマ（プロトン：130eV - 500keV）がそれによってどのように変化するかを統計的に調べた。

1. Pi2 開始は静止軌道ではプラズマ圧の増加に一致する。
2. プラズマ圧の増加は一様ではなく、Proton のドリフト軌道の影響を受ける。
3. 圧力増加に合わせ、磁場強度の減少と Pi2 帯での圧縮性振動が 10 分間程度続く。

以上を磁気圏電流系の過渡応答という観点から考えてみる。

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