

CONTENTS

Preface ----- i

I Solar Wind and Magnetosphere

1. Dayside Reconnection Rate: Disagreements between Theory and Observation, K. Maezawa ----- 1
2. Relationships between the IMF and the Substorm Onset: a Critical Review, T. Iyemori ----- 8
3. Heliomagnetic Excursion Model to Explain the Relations among pi2-Substorm, Sporadic-
and Recurrent-Storms, and Si-Triggering, T. Saito, K. Yumoto, A. Eitoku and Y. Kamide --- 18

II Polar Substorm

1. Pi Burst and Auroral Expansion, M. Kunitake ----- 24
2. Substorms Associated with Storm Sudden Commencements and Sudden Impulses, T. Hirasawa ----- 30
3. The Perpendicular Electric Field Associated with an Auroral Arc Observations and their
Interpretations: a Review, F. Yasuhara ----- 34
4. Auroral Substorms as seen by VHF Doppler Radars, T. Ogawa, B. B. Balsley and K. Igarashi ---- 43

III Magnetospheric Tail

1. Magnetospheric Substorms, G. Rostoker ----- 49
2. Observation of Nonthermal Particles in Magnetotail: a Review, T. Terasawa ----- 56
3. Simulation: The Lower-Hybrid-Drift Instability and Anomalous Resistivity near the
Magnetic Neutral Sheet, M. Tanaka and T. Sato ----- 62
4. Rapid Collapse of Antiparallel Magnetic Field System of Finite Width by Fast
Reconnection, M. Ugai ----- 70
5. Particle Acceleration by the α -Effect in a Collisionless Plasma and the Magnetospheric
Substorms, T. Namikawa, Y. Hosoya and H. Hamabata ----- 77
6. Rüdler Effect in a Collisionless Plasma and Field-Aligned Current in the Magnetotail,
T. Namikawa ----- 81
7. Statistical Characteristics of Plasma Flow in the Magnetotail, H. Hayakawa, A. Nishida
and E. W. Hones, Jr. ----- 83

8.	Fermi-Type Acceleration in the Magnetotail -A Possible Origin of Electron Pitch Angle Anisotropy-, T. Hada, A. Nishida, T. Terasawa and E. W. Hones, Jr. -----	93
9.	Some Characteristics of Substorm Development Derived from Multi-Satellite Observations at Synchronous Orbit, T. Nagai -----	104
10.	Shielding of the Magnetospheric Convection Electric Field and Energetic Charged Particle Penetrations Towards the Earth, M. Ejiri -----	113

IV Wave Phenomena

1.	Auroral Kilometric Radiation, A. Morioka and H. Oya -----	117
2.	Substorm Associated pi2 Magnetic Pulsations, T. Sakurai -----	130
3.	A Statistical Study of Low-Latitude pi2's Associated with Magnetospheric Substorms, K. Yumoto, T. Saito, A. Eitoku and Y. Kamide -----	139
4.	Pi3 Magnetic Pulsations Associated with Substorms, H. Nagano, A. Suzuki, J. S. Kim and M. Sugiura -----	146
5.	Some Problems on Geomagnetic Micropulsations, Y. Higuchi -----	153
6.	Auroral Hiss and AKR during Substorm, K. Makita -----	158
7.	The Trans-Equatorial Helium Whistler, S. Watanabe and T. Ondoh -----	165
8.	Low-Frequency Plasma Waves in the Auroral Ionosphere Excited by Electric Field and Particle Precipitation, T. Ogawa, H. Mori and S. Miyazaki -----	169

V Substorm Effects in the Thermosphere

1.	The Neutral Composition Change During Storms, Y. Nakayama -----	175
2.	Ducting Mechanism of the Upper Thermospheric Gravity Waves, S. Maeda -----	184
3.	Comment on 'Storm Effects in the Ionosphere', T. Tanaka -----	190

