

CONTENTS

The EISCAT Facility 1
T. Hagfors
The Viking Satellite 11
K. Fredga

Physics of the High Latitude Ionosphere

The Role of the Auroral Ionosphere in Magnetospheric
Substorms 19
R.A. Wolf and R.W. Spiro
Characteristics of the Polar Cap at Ionospheric Levels and
Present Understanding of the Physical Processes that
give Rise to these Characteristics 39
A. Brekke
The Low Altitude Cleft: Plasma Entry and Magnetospheric
Topology..... 57
J.D. Winningham and R.A. Heelis
Incoherent-Scatter Radar Measurements of Electric Field and
Plasma in the Auroral Ionosphere..... 73
R. Vondrak
Irregularities and Instabilities in the Auroral F-Region 95
J.F. Vickrey and M.C. Kelley
Significance of Scatter Radar Studies of E and F Region
Irregularities at High Latitudes..... 115
R.A. Greenwald
Ionospheric Modification and Stimulated Emissions 149
J.A. Fejer
Plasma Physics on Auroral Field Lines: The Formation of Ion
Conic Distributions..... 165
M. Ashour-Abdalla and H. Okuda

Solar Wind Influence on the High Latitude Ionosphere

Dependence of the High-Latitude Ionospheric Fields and Plasma Characteristics on the Properties of the Interplanetary Medium	189
G. Rostoker	
Solar Wind-Magnetosphere Energy Coupling.....	205
S.-I. Akasofu	
Interpretation of Observed Relations between Solar Wind Characteristics and Effects at Ionospheric Altitudes	225
S.W.H. Cowley	
 <u>High Latitude Magnetospheric Physics above a few Thousand Kilo- meters</u>	
Cold Plasma Distribution above a few Thousand Kilometers at High Latitudes	251
C.R. Chappell	
The Hot Ion Composition, Energy, and Pitch Angle Charac- teristics above the Auroral Zone Ionosphere.....	271
R.G. Johnson	
The Hot Electrons in and above the Auroral Ionosphere: Observations and Physical Implications	295
D.A. Bryant	
On the Composition of the Ring Current and the Plasmasheet and what it tells about the Sources of these Hot Plasma Populations	313
H. Balsiger	
Birkeland Currents: Present Understanding and some Remaining Questions.....	335
T.A. Potemra	
High Latitude Electromagnetic Plasma Wave Emission.....	355
D.A. Gurnett	
Correlation of Auroral Kilometric Radiation with Visual Auroras and with Birkeland Currents	377
N.A. Saflekos, R.E. Sheehan and R.L. Carovillano	

A Review of Electrostatic Waves in the Topside Ionosphere..... 399
P.M. Kintner

Effects of Heavy Ions on Microscopic Plasma Physics
in the Magnetosphere 415
R. Gendrin

Anomalous Resistivity on Auroral Field Lines and its Role in
Auroral Particle Acceleration 437
A.A. Galeev

Solitary Waves and Double Layers as the Source of Parallel
Electric Fields in the Auroral Acceleration Region 453
F.S. Mozer and M. Temerin

Numerical Simulations of Plasma Double Layers 469
C.K. Goertz and J.E. Borovsky

Causes of Particle Precipitation along Auroral Field Lines..... 493
L.R. Lyons

An Alfvén Wave Model of Auroral Arcs 515
G. Haerendel

Participants 537

Index 541