

International Conference on Cosmic Rays and the Earth Storm

CONTENTS

II-1. Hydromagnetics, Geomagnetic Rapid Variation, Whistler and VLF Emission

II-IA. Hydromagnetics

	Page
II-1A-1. Hydromagnetic Waves in the Exosphere	T. NAMIKAWA 1
II-1A-2. Hydromagnetic Radiation of the Sun and Its Effect at the Earth..	K. D. COLE 6
II-1A-3. Infrasonic Pressure Waves Associated with Magnetic Storms..... P. CHRZANOWSKI, J. M. YOUNG, G. GREENE and K. T. LEMMON 9
II-1A-P1. Hydromagnetic Picture of Earth Storms.....	A. J. DESSLER 13
II-1A-P2. The Interplanetary Field and Auroral Theory	J. W. DUNGEY 15

II-IB. Geomagnetic Rapid Variation

II-1B-1. Equatorial Micropulsations	V. R. HUTTON 20
II-1B-2. The Connection of Pc and Pt Pulsations with Magnetic Storms..... V. A. TROITSKAYA, I. I. ROKITYANSKY, K. YU. ZIBIN, R. V. SCHEPETNOV and D. A. ROKITYANSKAYA 24
II-1B-3. Pulsations during Sudden Commencements of Magnetic Storms and Long Period Pulsations in High Latitudes	A. I. OHL 24
II-1B-4. Magnetic Field Fluctuations on the Earth and in Space N. F. NESS, T. L. SKILLMAN, G. S. SCEARCE and J. P. HEPPNER 27
II-1B-5. Morphological Study of Geomagnetic Pulsations.....	Y. KATO and T. SAITO 34
II-1B-6. Hydromagnetic Waves in the Earth's Exosphere and Geomagnetic Pulsa- tions.....	Y. KATO and T. TAMAO 39
II-1B-7. Frequency Analysis of Selected Storms..	J. R. HEIRTZLER and M. J. DAVIDSON 44
II-1B-8. The Microstructure of the Isc of Geomagnetic Storms	J. BOUSKA 45
II-1B-P1. Geomagnetic Rapid Variations during IGY and IGC J. C. CARDUS and A. ROMANA 47
II-1B-P2. Characteristics of Geomagnetic Pulsations	J. A. JACOBS 55
II-1B-P3. Fine Structure of Magnetic Storms in Respect of Micropulsations ($T < 20$ Sec) V. A. TROITSKAYA, L. V. ALPEROVICH, M. V. MELNIKOVA and G. A. BULATOVA 63
II-1B-P4. Geomagnetic Pulsations and Hydromagnetic Oscillations of Exosphere.... Y. KATO 71
II-1B-P5. Chairman's Summary	E. H. VESTINE 74

II-IC. Whistler and VLF Emission

II-1C-1. Correlations between the Very Low Frequency Emissions and the Mag- netic and Cosmic Ray Storms	Y. CORCUFF and J. P. LEGRAND 76
II-1C-2. The Disturbances of Exosphere as Seen from the VLF Emission S. YOSHIDA and T. HATANAKA 78
II-1C-3. Whistler Signals Observed with the Vanguard III Satellite J. C. CAIN, I. R. SHAPIRO, J. D. STOLARIK and J. P. HEPPNER 84
II-1C-4. VLF Phenomena in Lower Latitudes during Magnetically High Active Periods	J. OUTSU and A. IWAI 88
II-1C-5. Amplification of the VLF Electromagnetic Wave by a Proton Beam through the Exosphere.....	K. MAEDA and I. KIMURA 92
II-1C-P1. Whistlers and VLF Emissions in Connection with the Earth Storm..... K. MAEDA 95

II-2. Radiation Belts

II-2-1. Balloon X-Rays and the Radiation Belts	J. R. WINCKLER 104
--	--------------------

II-2-2.	The Cosmic Ray Neutron Density at High Altitude	R. C. HAYMES, W. D. REIDY and S. A. KORFF 115
II-2-3.	The Flux and Energy Spectra of the Protons in the Inner Van Allen Belt.....	J. E. NAUGLE and D. A. KNIFFEN 118
II-2-4.	Injection of Trapped Protons from Solar Flare Particles	S. F. SINGER and A. M. LENCHEK 123
II-2-5.	Observation of the Radiation Anomalies at the Altitudes of 200-300 km	V. L. GINZBURG L. V. KURNOSOVA, V. I. LOGACHEV, L. A. RAZORENOV and M. I. FRADKIN 128
II-2-6.	Correlation between Outer Radiation Belt and Solar-Geophysical Phenomena	S. YOSHIDA, N. MATUURA and T. NAGATA 132
II-2-7.	Störmer's Inner Allowed Regions and the Radiation Belts	R. GALL 139
II-2-8.	Mechanism of the Mirror Point Loss	S. FUKUI, S. HAYAKAWA, H. NISHIMURA and H. OBAYASHI 144
II-2-9.	Source of Electrons in the Van Allen Belts	P. J. KELLOGG 148
II-2-10.	Particle Diffusion in the Radiation Belts.....	N. HERLOFSON 151
II-2-11.	Dynamics of the Outer Radiation Belt.....	J. A. SIMPSON, C. Y. FAN and P. MEYER 154
II-2-12.	Investigations of Radiation during Flights of Satellites, Space Vehicles and Rockets.....	S. N. VERNOV, E. V. GORCHAKOV, YU. I. LOGACHEV, V. E. NESTEROV, N. F. PISARENKO, I. A. SAVENKO, A. E. CHUDAKOV and P. I. SHAVRIN 162
II-2-13.	Nature and Origin of Radiation Belts.....	S. F. SINGER 187
II-2-14.	On the Theory of the Outer Van Allen Belt	H. ALFVÉN 194

II-3. Solar Radiation

II-3A. Electromagnetic Wave

II-3A-1.	Some Features of the Type IV Radiobursts	E. I. MOGILEVSKY and S. T. AKINIYAN 195
II-3A-2.	Type IV (Continuum) Radio Bursts from the Sun	A. R. THOMPSON 198
II-3A-3.	Structure of the Type IV Radio Burst and Its Relation with Solar Cosmic Rays.....	A. BOISCHOT and M. PICK 203
II-3A-4.	Yearly Variation in Activities Outbursts at Microwaves and Flares during a Solar Cycle with Special Reference to Unusual Cosmic-Ray Increases.....	T. TAKAKURA and M. ONO 207
II-3A-5.	Some Comments on Type IV Bursts	H. TANAKA and T. KAKINUMA 211
II-3A-6.	The Nature of Type IV Solar Radio Bursts	M. R. KUNDU 215
II-3A-7.	Height and Motion of the Solar Radio Bursts at 200 Mc/s	M. MORIMOTO and K. KAI 220
II-3A-8.	The Sizes of the Sources of Solar Radio Bursts at 40 and 60 Mc/s	A. A. Weiss and K. V. SHERIDAN 223
II-3A-9.	A Model of the Coronal Condensation	E. HIEI 227
II-3A-10.	Structure of the Flare	Z. SUEMOTO, E. HIEI and T. HIRAYAMA 231
II-3A-11.	On the Exciters of Type II and Type III Solar Radio Bursts	Y. UCHIDA 234
II-3A-P1.	Optical Evidence for Corpuscular Radiation of the Sun	M. WALDMEIER 238
II-3A-P2.	Solar Radio Outbursts and Acceleration of Electrons	T. TAKAKURA 243
II-3A-P3.	The Radio Emission from Solar Flares	J. P. WILD 249

II-3B. Particles

II-3B-1.	Some Relations between Centimeter-Wave Radio Bursts and Solar Cosmic Rays and X-Rays	M. R. KUNDU 259
II-3B-2.	Characteristics of Solar-Flare Cosmic Rays during IGY.....	J. C. ANDERSON, R. L. CHASSON and K. MAEDA 264
II-3B-3.	Cosmic Ray Increases Associated with Solar Flares	B. G. WILSON and C. P. NEHRA 269
II-3B-4.	On Maximum of Cosmic-Ray Intensity prior to a Prebaisse-Effect	L. D. de FEITER and J. P. LEGRAND 272
II-3B-5.	Solar Active Regions and Solar Cosmic Rays	J. C. NOYES 275

II-3B-6.	Intensity of Solar Proton Emissions	E. L. CHUPP and R. W. WILLIAMS	281
II-3B-7.	Cosmic Ray Effects Associated with Polar Cap Absorption Events.....	V. A. SARABHAI and G. L. PAI	286
I-3B-8.	A Synopsis of Riometer Observations on the Polar Cap Events of November 1960	T. R. HARTZ and E. L. VOGAN	289
II-3B-9.	The Solar Cosmic-Ray Increase of November 20, 1960	H. CARMICHAEL and J. F. STELJES	293
II-3B-10.	Interpretation of the July 1959 and November 1960 Cosmic Ray Events..	J. G. ROEDERER	297
II-3B-11.	Geomagnetic Storm Effect on the Solar Cosmic-Rays in November 1960 and Their Propagation Process in the Interplanetary Space.....	M. KODAMA and M. KITAMURA	298
II-3B-12.	Observations at College, Alaska, on November 1960 Cosmic Ray Increases	S. A. KORFF	303
II-3B-13.	Increase of the Cosmic-Ray Nucleonic Intensity in November, 1960.....	J. A. LOCKWOOD and M. A. SHEA	306
II-3B-14.	The Propagation of Cosmic Rays through Interplanetary Space on May 4, 1960, and during November, 1960.....	K. G. McCracken	310
II-3B-15.	Short-Time Increases of the Cosmic Ray Nuclei Intensity Associated with the Solar Activity..	L. V. KURNOSOVA, L. A. RASORENOV and M. I. FRADKIN	315
II-3B-16.	Rocket Observations of Solar Protons during the November 12, 1960 Event	K. W. OGILVIE, D. A. BRYANT and L. R. DAVIS	317
II-3B-17.	Emission of Carbon Group Heavy Nuclei from a 3 Solar Flare.....	H. YAGODA, R. FILZ and K. FUKUI	320
II-3B-18.	Heavy Nuclei in Solar Cosmic Rays.....	C. E. FICHEL and D. E. Guss	321
II-3B-19.	Rocket Observations of Solar Protons on September 3, 1960	L. R. DAVIS, C. E. FICHEL, D. E. GUSS and K. W. OGILVIE	326
II-3B-20.	Solar Cosmic Ray Event of September 3, 1960	P. D. BHAVSAR	329
II-3B-21.	A Survey of Polar Cap Absorption Events (Solar Proton Events) in the Period 1952 through 1960.....	D. K. BAILEY and J. M. HARRINGTON	334
II-3B-22.	Review of Some Statistical Studies	L. BIERMAEMERN	337
II-3B-23.	Review of Recent High Energy Solar Particle Events including November 12, 1960	H. CARMICHAEL	337
II-3B-24.	Solar Protons in November 1960	E. P. NEY and W. STEIN	345
II-3B-25.	Geomagnetic and Interplanetary Effects on Solar Cosmic Rays	J. R. WINCKLER	353
II-3B-26.	Cosmic Ray Intensity Bursts in the Stratosphere in November 1960	A. N. CHARAKHCHYAN, V. F. TULINOV and T. N. CHARAKHCHYAN	360
II-3B-27.	The Energy Spectrum and Time Dependence of the Intensity of Solar Cosmic Ray Protons in Flares.....	A. N. CHARAKHCHYAN, V. E. TULINOV and T. N. CHARAKHCHYAN	365

II-4. Modulation

II-4-1.	Fine Structure of Forbush Decreases	R. L. CHASSON	373
II-4-2.	Anisotropy and Changes of Energy Spectrum during Cosmic Ray Storms	V. A. SARABHAI, G. L. PAI and U. R. RAO	379
II-4-3.	Time Variation of Cosmic Ray Intensity from North and South Directions at Low Latitudes.....	V. A. SARABHAI and B. GOTTLIEB	384
II-4-4.	An Attempt of Analyzing Cosmic Ray Storms	A. E. SANDSTROM	386
II-4-5.	Solar Magnetic Cloud Producing Cosmic-Ray Storm, Magnetic Storm and Type IV Solar Radio Outburst	Y. KAMIYA	391
II-4-6.	Mechanism of Cosmic Ray Storms Inferred from Some Statistical Results	K. SINNO	395
II-4-7.	The Latitude Effect of Cosmic-Ray Storm	H. TAKAHASHI	400
II-4-8.	On Cosmic-Ray Intensity Increase during Geomagnetic Storm	I. KONDO	402
II-4-9.	Cosmic Ray Evidence for a Ring Current	P. J. KELLOGG and J. R. WINCKLER	408
II-4-10.	Cosmic Ray Modulation and Geomagnetism.....	A. EHMERT	416

II-4-11.	Phases Changes in the 27 Day Type of Intensity Variation of Primary Cosmic Rays from January 1955 to January 1961.....	A. FREON	418
II-4-12.	The Recovery Characteristics of Forbush Decreases and the Configuration of the Associated Solar Emission	I. ESCOBAR, N. W. NERURKAR, O. TRONCOSO and M. ZUBIETA	422
II-4-13.	Explorer XII Results.....	F. B. McDONALD	428
II-4-14.	A Study of the Rigidity and Charge Dependence of Primary Cosmic Ray Temporal Variations	F. B. McDONALD and W. R. WEBBER	428
II-4-15.	Flux and Energy Spectra of Primary Cosmic Ray Protons from 70 to 400 Mev.....	R. VOGT	436
II-4-16.	Secular Variation of the Cosmic Ray Equator and the Latitude Knee at Sea Level	M. KODAMA, S. FUKUSHIMA and T. MAKINO	441
II-4-17.	The Secular Variation of the Geomagnetic Field and the Cut-Off Momenta	R. GALL	444
II-4-18.	Cosmic Ray Threshold Rigidities	C. J. BLAND, J. J. QUENBY and G. J. WENK	449
II-4-19.	Asymptotic Directions and Cut-Off Rigidities in the Geomagnetic Field.. ..	K. G. McCracken and A. FREON	455
II-4-20.	The Energy Spectrum and the Energy Balance of Cosmic Radiation	H. KOMORI	457
II-4-21.	On the World-wide Distribution of the Daily Variation of the Cosmic Ray Neutron Intensity and Its Variation	T. KANNO and K. MURAKAMI	460
II-4-22.	Solar Diurnal Variation of Cosmic Ray Intensity.....	M. A. POMERANTZ, S. P. DUGGAL and K. NAGASHIMA	464
II-4-23.	Some Characteristics of the Daily Variation of Cosmic Ray Intensity....	R. P. KANE	468
II-4-24.	Direction of the Cosmic Ray Diurnal Anisotropy.....	A. E. SANDSTROM, E. DYRING and S. LINDGREN	471
II-4-25.	A New Study of the Cosmic Ray Diurnal Variation in Relation to Geomagnetic Activity	A. E. SANDSTROM	477
II-4-26.	Solar Diurnal Variation of Cosmic Rays Underground near the Geomagnetic Equator	V. H. REGENER	481
II-4-27.	The Diurnal Variation of the Intensity of the Nucleonic Component during Forbush Decrease.....	J. B. CROWDEN and P. L. MARSDEN	484
II-4-28.	A Lunar Cosmic Ray Intensity Variation II.....	E. BAGGE and G. BINDER	486
II-4-29.	A Summary of Secular Variations of Cosmic Rays	H. V. NEHER	492
II-4-30.	Review of Cosmic Ray Daily Variations and Geomagnetic Effects.....	V. A. SARABHAI	500
II-4-31.	Summary of Japanese Works.....	I. KONDO	504
II-4-32.	The Cosmic Ray Intensity Gradient in Space during Solar Modulation ..	J. A. SIMPSON, C. Y. FAN and P. MEYER	505
II-4-33.	Atmospheric Effects on the Cosmic-Ray Meson Intensity	M. WADA	508
II-4-34.	Atmospheric Effects on the Sea Level Cosmic Ray Intensity	S. T. LINDGREN	511
II-4-35.	Neutron Production in Lead by Cosmic Ray Protons.....	E. B. HUGHES, P. L. MARSDEN, M. A. MEYER and A. W. WOLFENDALE	516
II-4-36.	Multiple Neutron Production in an IGY Neutron Monitor	P. FIELDHAUSE, E. B. HUGHES and P. L. MARSDEN	518
II-4-37.	Some Experiments with Mobile Neutron Monitor	J. PHILIPS and N. R. PARSONS	519

II-5. Interplanetary Plasma

II-5-1.	Some Aspects of the Internal Structure of a Solar Flare Plasma Cloud.. ..	C. P. SONETT, P. J. COLEMAN, Jr. and L. DAVIS, Jr.	524
II-5-2.	Hyperwaves, Shock-Like Phenomena in the Outer Exosphere ..	C. P. SONETT	528
II-5-3.	Ejection of Plasma with the Magnetic Field and Low-Energy Solar Cosmic Rays from the Region of Chromospheric Flares....	A. S. DVORJASHIN	532
II-5-4.	Some Features of Chromospheric Flares and Its Corresponding Active		

	Regions Responsible for Forbush Effect	B. VLADIMIRSKY	534
II-5-5.	On the Streaming of a Plasma through the Geomagnetic Field ..	E. KARLSON	538
II-5-6.	The Effect of Solar Disturbances and the Galactic Magnetic Field on the Interplanetary Gas	L. DAVIS, Jr.	543
II-5-7.	Magnetic Field Measurements with the Explorer X Satellite	J. P. HEPPNER, N. F. NESS, T. L. SKILLMAN and C. S. SCEARCE	546
II-5-8.	Direct Observations of the Interplanetary Plasma.....	H. S. BRIDGE, C. DILWORTH, A. J. LAZARUS, E. F. LYON, B. ROSSI and F. SCHERB	553
II-5-9.	Some Theoretical Aspects of Interplanetary Plasma	R. LÜST	560
II-5-10.	Interplanetary Dynamics and Cosmic Ray Modulation	E. N. PARKER	563
II-5-11.	Characteristics of Solar Energetic Particles Which Excite Polar-Cap Blackouts	K. SINNO	567
II-5-12.	Propagation of Solar Particles and the Interplanetary Magnetic Field	C. S. WARWICK	571
II-5-13.	Propagation of Solar Particles through Interplanetary Magnetic Fields	T. OBAYASHI	572
II-5-14.	Intensity-Time Relationship of Cosmic-Ray Unusual Increase, not Charac- terised by Impact Zone Effects	K. NAGASHIMA	575
II-5-15.	On the Mechanism of the Cosmic-Ray Storm.....	M. KITAMURA	578
II-5-16.	Forbush Decreases Produced by Diffusive Deceleration Mechanism in In- terplanetary Space.....	S. F. SINGER, A. M. LENCHEK and H. LASTER	583
II-5-17.	Modulation of the Cosmic Ray Intensity by the Interplanetary Magnetic Field	H. ELLIOT	588
II-5-18.	Morphology of Solar Flare Effects on Cosmic Rays and Sub-Cosmic Rays	M. KODAMA	594
II-5-19.	The Propagation of Solar Particles to the Earth.....	T. GOLD	600
II-5-20.	General Discussion on Interplanetary Plasma.....		605

II-6. Synthetic Theory of the Earth Storms

	Emission from the Sun, and Transmission of Radiation through the Interplanetary Space.....	T. GOLD	607
	Particles in the Magnetosphere	S. F. SINGER	609
	Radiation Belt.....	S. HAYAKAWA	612
	Radiation Belt.....	S. N. VERNOV	613
	Radiation Belt-Results of the Direct Measurements of Interplanetary Plasma and Magnetic Field by Explorer X	B. ROSSI	615
	Magnetic Effect.....	E. H. VESTINE	616
	Auroral Phenomena	S. CHAPMAN	619
	Transmission of Hydromagnetic Wave to the Earth	K. MAEDA	620
	Comments and Discussion		623