

CONTENTS

VOL. 1 (OG-1 to 119)

	Page
OG-1 Soft X-Ray Sources. S. HAYAKAWA, T. KATO, T. KOHNO, K. NISHIMURA, Y. TANAKA and K. YAMASHITA. Abstract	1
OG-2 Time Variation of X-Ray Spectrum and Optical Luminosity of Sco X-1 U. R. RAO, E. V. CHITNIS, U. B. JAYANTHI, A. S. PRAKASARAO, S. M. BHANDARI, T. KITAMURA, M. NAKAGAWA, K. TAKAGISHI, M. MATSUOKA, S. MIYAMOTO, M. ODA and Y. OGAWARA	2
OG-3 X-Ray and Optical Observations of Sco X-1 and Observations of the X-Ray Background, G. GARMIRE, W. MOORE, J. STEVENS, J. KRISTIAN and H. LANNING	7
OG-4 Spectral and Pulsed X-Ray Emission from the Crab Nebula. I. R. TUOHY, J. R. HARRIES, A. P. J. LUYENDYK, A. J. BRODERICK, K. B. FENTON	13
OG-5 High Energy X-Rays from the Southern Sky. W. H. G. LEWIN, J. E. McCLINTOCK, G. R. RICKER. Abstract	19
OG-6 Intensity and Energy Spectra of Several X-Ray Sources in the 20-150 KeV Energy Band. P. C. AGRAWAL, S. BISWAS, G. S. GOKHALE, V. S. IYENGAR, P. K. KUNTE, R. K. MANCHANDA and B. V. SREEKANTAN	20
OG-7 Short Period Variations in the Intensity and Energy Spectrum of Cyg-X-1. P. C. AGRAWAL, G. S. GOKHALE, V. S. IYENGAR, P. K. KUNTE. R. K. MANCHANDA and B. V. SREEKANTAN	26
OG-8 Measurement of The Location of The X-Ray Source Cyg X-1. S. MIYAMOTO, M. FUJII, M. MATSUOKA, J. NISHIMURA, M. ODA, Y. OGAWARA, S. OHTA and M. WADA. Abstract	30
OG-9 Interaction of Cosmic Rays with Interstellar Matter and Possible Excitation of X-Ray Lines. S. D. VERMA	31
OG-10 A Balloon Observation of Diffuse Background γ -Rays in Energy Range from 100 KeV to 1 MeV. A. DANJO, S. HAYAKAWA, M. IKEDA, I. KASAHARA, F. MAKINO, Y. TANAKA, P. C. AGRAWAL and B. V. SREEKANTAN. Abstract	37
OG-11 Comment on Inverse Compton Models for the Isotropic X-Ray Background. R. COWSIK and E. J. KOBETICH	38
OG-12 Origin of Background Radiations. O. P. PRYLUTSKY, I. L. ROSENTAL. Abstract	44
OG-13 Search for Pulsed Gamma-Rays from the Crab. R. L. KINZER, N. SEEMAN and G. H. SHARE	45
OG-14 Observations of Cosmic Gamma Radiation above 10 MeV. R. L. KINZER, N. SEEMAN and G. H. SHARE	51
OG-15 Gamma Ray Astronomy above 15 MeV Using a Gas Cerenkov Detector. H. F. HELMKEN and J. A. HOFFMAN. Abstract	56
OG-16 Investigation of Gamma Radiation from the Crab Pulsar. G. KETTENRING, H. A. MAYER-HASSELWANDER, E. PFEFFERMANN, K. PINKAU, H. ROTHERMEL, M. SOMMER	57
OG-17 Detection of Pulsed Gamma Radiation from the Crab Nebula. R. BROWNING, D. RAMSDEN, P. J. WRIGHT. Abstract	63
OG-18 Balloon Borne Gamma Ray Astronomy Results. C. E. FICHTEL, R. C. HARTMAN, D. A. KNIFFEN and M. SOMMER. Abstract	64
OG-19 Search for Energetic Gamma-Rays from Local Sources of Radio-Frequency Radiation. S. A. VOLOBUYEV, A. M. GALPER, A. F. IYUDIN, V. G. KIRILLOV-UGRYUMOV, B. I. LUCHKOV and Yu. V. OZEROV. Abstract	65

OG-20	A Search for 10^{11} to 10^{12} eV Gamma Rays from Discrete Sources. G. G. FAZIO, H. F. HELMKEN, E. O'MONGAIN, G. H. RIEKE, T. C. WEEKES. Abstract	66
OG-21	Possible Evidence for Pulsed $\sim 10^{12}$ eV Gamma-Rays from NP-0532. J. E. GRINDLAY. Abstract	67
OG-22	Upper Limits of Luminiscence of Some Extragalactical Objects in the Range of Rigid Gamma-Rays. L. S. BRATOLYUBOVA-TSULUKIDSE, E. A. PRYAKHIN, I. A. SAVENKO, V. Ya. YUFARKIN, L. F. KALINKIN, A. S. MELIORANSKY and O. F. PRILYTSKY. Abstract	68
OG-23	A Search for the Emission of Energetic Gamma Rays from the Plane of the Galaxy and Other Reported Sources. G. H. DAHLBACKA, P. S. FREIER, and C. J. WADDINGTON. Abstract	69
OG-24	New Point Gamma-Ray Source Libra γ -1, Evidence for Time Variation. G. M. FRYE, P. A. ALBATS, A. D. ZYCH, J. A. STAIB, V. D. HOPPER, W. R. RAWLINSON and J. A. THOMAS	70
OG-25	A Possible High Energy Gamma-Ray from Cygnus Region. B. M. VLADIMIRSKY, I. V. PAVLOV, A. A. STEPANJAN and V. P. FOMIN. Abstract	76
OG-26	The 0.511 MeV Gamma Rays Measured with the Ge(Li) Detector at the Balloon Altitude. S. NAKAGAWA, M. TSUKUDA, K. OKUDAIRA, Y. HIRASIMA, M. YOSHIMORI, T. YAMAGAMI, H. MURAKAMI and S. IWAMA	77
OG-27	Cosmic Flux of Low Energy Gamma Rays. S. V. DAMLE, R. R. DANIEL, G. JOSEPH and P. J. LAVAKARE	84
OG-28	Evidence for High Energy Gamma-Radiation from the Galactic Plane. R. BROWNING, D. RAMSDEN, P. J. WRIGHT. Abstract	90
OG-29	The Flux of Galactic High-Energy Gamma Rays. G. W. CLARK, G. P. GARMIRE and W. L. KRAUSHAAR	91
OG-30	Cosmic Gamma Rays from Suprathermal Proton Bremsstrahlung. F. C. JONES	97
OG-31	Dynamical Models of the Galaxy and its Gamma Ray Emission. R. COWSIK and I. D. HUTCHEON	102
OG-32	Energy Spectrum of γ -Rays from the Nuclear Bulge of the Galaxy. K. C. ANAND and S. A. STEPHENS. Abstract	108
OG-33	The Energy Spectrum of Cosmic-Ray Electrons from 0.5 to 10 GeV. B. N. SWANENBURG, J. J. BURGER and P. A. J. de KORTE. Abstract	109
OG-34	Primary Electron Observations ($3 \leq E \leq 15$ GeV) Recorded on the ESRO II Satellite. P. L. MARSDEN, R. JAKEWAYS and I. R. CALDER	110
OG-35	The Electron Energy Spectrum in the Galactic Cosmic Ray Flux in the Region 5-600 GeV. V. I. ZATSEPIN. Abstract	116
OG-36	Flux and Energy Spectrum of Cosmic Ray Electrons between 10 and 1000 GeV. P. MEYER and D. MULLER	117
OG-37	The Primary Cosmic Ray Electron Spectrum from 10 GeV to about 200 GeV. R. F. SILVERBERG, J. F. ORMES, V. K. BALASUBRAHMANYAN, M. J. RYAN	122
OG-38	Observation of the Primary Electron at the High Energy Side with Emulsion Chamber. M. MATSUO, J. NISHIMURA, E. MIKUMO, K. NIU, and T. TAIRA. Abstract	128
OG-39	Energy Spectrum of Cosmic Ray Electrons at Energies ≥ 100 GeV. K. C. ANAND, R. R. DANIEL and S. A. STEPHENS. Abstract	129

	Page
OG-40	A Method for Determining the Mean Atomic Mass of the Elements in the Primary Cosmic Radiation Throughout the Latitude Sensitive Part of the Spectrum. N. LUND, I. LUNDGAARD RASMUSSEN and B. PETERS 130
OG-41	An Upper Limit on the Flux of Primary Cosmic Ray Anti-Alpha Particles from 0.3 to 3 GeV/nucleon. P. EVERSON and P. MEYER 138
OG-42	A Search for Antiprotons in the Primary Cosmic Radiation with the Magnetic Spectrometer. E. A. BOGOMOLOV, N. D. LUBYANAYA and V. A. ROMANOV. Abstract 144
OG-43	Anti-Nuclei in High Energy Cosmic Rays? S. V. DAMLE, YASH PAL, T. N. RENGARAJAN, S. N. TANDON and R. P. VERMA. Abstract 145
OG-44	Search for Antimatter in the Primary Cosmic Rays using a Magnetic Spectrometer. A. BUFFINGTON, L. H. SMITH, G. SMOOT, M. A. WAHLIG and L. W. ALVAREZ. Abstract 146
OG-45	Measurement of the Primary Cosmic Ray Nuclear Rigidity Spectra for Individual Elements of Charge $Z \geq 2$. A. BUFFINGTON, L. H. SMITH, G. SMOOT, M. A. WAHLIG and L. W. ALVAREZ 147
OG-46	Particle Astronomy with a Superconducting Magnet. A. BUFFINGTON. Abstract 155
OG-47	The Measurement of the Low Energy Helium Isotopes in the Primary Cosmic Rays. E. TAMAI, N. NARITA and T. SAKAI 156
OG-48	Production of ^2H and ^3He Nuclei in Cosmic Rays and Propagation of Protons and Helium Nuclei through Interstellar Space. S. BISWAS and S. RAMADURAI 162
OG-49	Cross Sections for the Formation and Destruction of Cosmic Ray Deuterons and ^3He Nuclei. J.-P. MEYER. Abstract 168
OG-50	Cosmic Ray Deuterons and ^3He , Interplanetary Deceleration and Energy Spectra of Sources. J.-P. MEYER. Abstract 169
OG-51	Energy Spectrum of Primary Cosmic Rays in the 10^{11} - 10^{15} eV According to the Data of Proton-4 Measurements. N. L. GRIGOROV, Yu. V. GUBIN, B. M. JAKOVLEV, I. D. RAPOPORT, I. A. SAVENKO, V. V. AKIMOV and V. E. NESTEROV. Abstract 170
OG-52	On Irregularity in the Primary Cosmic Spectrum in the 10^{12} eV Energy Range. N. L. GRIGOROV, N. A. MAMONTOVA, I. D. RAPOPORT, I. A. SAVENKO, V. V. AKIMOV and V. E. NESTEROV. Abstract 171
OG-53	Energy Spectrum of Primary Cosmic Rays α -particles in High Energy Range According to the Measurements on Proton-3 Satellite. N. L. GRIGOROV, I. D. RAPOPORT, I. A. SAVENKO, V. E. NESTEROV and V. L. PROKHIN. Abstract 172
OG-54	The Cosmic Ray Proton and Helium Spectra above 50 GeV. M. J. RYAN, V. K. BALASUBRAHMANYAN and J. F. ORMES 173
OG-55	Charge Composition of Galactic Cosmic Radiation. J. F. ORMES, V. K. BALASUBRAHMANYAN and M. J. RYAN 178
OG-56	Nuclear-Electromagnetic Cascades from Alpha Particles Incident on an Iron Absorber. W. V. JONES 184
OG-57	Nuclear-Electromagnetic Cascades from Nuclei with $Z \geq 3$. W. V. JONES 190
OG-58	The Formation of Li Be B by Galactic Cosmic Rays in Space, and its Relation with Stellar Observations. M. MENEGUZZI, J. AUDOUZE and H. REEVES. Abstract 196
OG-59	New Observations and Calculations of Primary Be/B in the Cosmic Rays. F. W. O'DELL, M. M. SHAPIRO, R. SILBERBERG and C. H. TSAO 197

	Page
OG-60	The Rigidity Spectrum of $Z \geq 3$ Nuclei from 5 GV to over 300 GV. R. L. GOLDEN, J. H. ADAMS, W. R. BOYKIN, C. L. DENNY, T. M. K. MARAR, H. H. HECKMAN and P. L. LINDSTROM 203
OG-61	Study on the Charge and Isotopic Composition of Medium Cosmic Ray Particles. R. BEAUJEAN and W. ENGE. Abstract 208
OG-62	Energy Dependence of the Abundances of Galactic He, L and M Nuclei from Satellite Measurements. M. GARCIA-MUNOZ, G. M. MASON and J. A. SIMPSON 209
OG-63	Abundances of the Galactic Nuclei H Through the Fe Group from Satellite Measurements. B. G. CARTWRIGHT, M. GARCIA-MUNOZ, and J. A. SIMPSON 215
OG-64	Revised Source Composition of Cosmic Rays from Hydrogen to Nickel. M. M. SHAPIRO, R. SILBERBERG and C. H. TSAO 221
OG-65	Charge Composition of Low Energy Cosmic Ray Nuclei of Elements Neon to Nickel. W. ENGE, K. P. BARTHOLOMA and K. FUKUI. Abstract 228
OG-66	The Chemical Composition of Cosmic Rays with $Z = 3-30$ at High and Low Energies. W. R. WEBBER, S. V. DAMLE and J. M. KISH 229
OG-67	Study of the Charge Spectrum of Cosmic-Ray Nuclei. K. A. CHOI and C. O. KIM 235
OG-68	Chemical Composition of Heavy Cosmic Ray Nuclei above 5 GV. M. CASSE, L. KOCH, N. LUND, J.-P. MEYER, B. PETERS, A. SOUTOUL and S. N. TANDON 241
OG-69	The Chemical Composition of Low Energy L and M Nuclei in the Primary Cosmic Radiation. E. TAMAI, N. NARITA, T. SAKAI and K. OGURA 246
OG-70	The Charge and Energy Spectra of Heavy Cosmic Ray Nuclei. P. S. FREIER, C. E. LONG, T. F. CLEGHORN and C. J. WADDINGTON 252
OG-71	Investigation of the Composition of Primary Cosmic Radiation at $> 10^{13}$ eV. V. I. SOKOLOVSKY. Abstract 258
OG-72	The Charge and Energy Distribution of Heavy Primaries above 10 GeV/nucleon. T. SAITO. Abstract 259
OG-73	Observation of VH and VVH Cosmic Rays with an Ionization-Cerenkov Detector System. W. R. BINNS, J. I. FERNANDEZ, M. H. ISRAEL, J. KLARMANN and R. A. MEWALDT 260
OG-74	Composition of Heavy Cosmic Ray Nuclei of $Z \geq 23$. L. L. KASHKAROV, L. I. GENAEVA and A. K. LAVRUKHINA. Abstract 266
OG-75	High Resolution Studies of Cosmic Rays with $Z > 30$. E. J. KOBETICH, P. B. PRICE, E. K. SHIRK, R. D. EANDI, W. Z. OSBORNE, L. S. PINSKY and R. B. RUSHING. Abstract 267
OG-76	Some results on the Heavy Primary Nuclei ($Z \geq 40$) obtained Outside the Earth's Magnetosphere. N. S. IVANOVA, V. V. VARYUKHIN, V. N. KULIKOV and E. A. YAKUBOVSKY. Abstract 268
OG-77	Comments on the Observation of Transuranic Nuclei in the Primary Cosmic Radiation. G. E. BLANFORD Jr., M. W. FRIEDLANDER, J. KLARMANN, S. S. POMEROY, R. M. WALKER, J. P. WEFEL and W. C. WELLS 269
OG-78	Calculations of Cross Sections and Their Application to Cosmic-Ray Physics. R. SILBERBERG and C. H. TSAO 273
OG-79	Non-Random Sub-Diurnal Variations in Sidereal Muon Coincidence Time Series. V. J. KISSELBACH. Abstract 278
OG-80	On the Study of the Sidereal Anisotropy of Cosmic Rays with Muon Telescopes Underground. H. S. AHLUWALIA 279

	Page
OG-81	The Interpretation of Sidereal Cosmic Ray Anisotropies. D. B. SWINSON 284
OG-82	Components of the Sidereal Anisotropy. R. M. JACKLYN and D. J. COOKE 290
OG-83	Spurious Sidereal Anisotropy arising from Annual Modulation of Solar Diurnal Variation of Cosmic Radiation. I. KONDO, H. UENO and K. NAGASHIMA 296
OG-84	Sidereal and Solar Anisotropy of High Energy Cosmic Rays Observed by an Air Cerenkov Telescope. Y. SEKIDO, K. NAGASHIMA, I. KONDO and S. SAKAKIBARA 302
OG-85	Investigation of the Galactic Anisotropy of Cosmic Radiation at Energies about 10^{14} eV. A. SOMOGYI, M. TATRALLYAY, G. VALAS, A. VARGA, B. BETEV, S. KAVLAKOV and P. STAEV. Abstract 302
OG-86	Anisotropic Distribution in the Arrival Directions of Muons at Sea Level. E. M. CARREIRA and C. L. COWEN. Abstract 309
OG-87	The Galactic Magnetic Field and Anisotropy of Cosmic Rays above 10^{17} eV. S. KARAKULA, J. L. OSBORNE, E. ROBERTS and W. TKACZYK. 310
OG-88	Arrival Directions of Large Air Showers of Primary Energy $> 10^{17}$ eV. J. LAPIKENS, R. MARTIN, R. J. O. REID, P. D. ROBINSON, R. M. TENNENT, A. A. WATSON and J. G. WILSON ... 316
OG-89	Arrival Directions of High Energy EAS. C. J. BELL, A. D. BRAY, R. G. BROWNLIE, G. J. CHAPMAN, S. A. DAVID, B. V. DENEHY, L. GOOREVICH, L. HORTON, J. G. LOY, C. B. A. McCUSKER, A. K. OUTHRED, L. S. PEAK, J. ULRICHS, L. S. WILSON and M. M. WINN 321
OG-90	Flare Star Production of Energetic Charged Particles. P. J. EDWARDS and M. McQUEEN 323
OG-91	Particle Acceleration by White Dwarfs and the Charge Spectrum of the Nuclear Component of Cosmic Rays. R. COWSIK 329
OG-91a	Cosmic Ray Electrons and the Gamma-Ray Background. R. COWSIK ... 334
OG-92	The Possibility of Energetic Cosmic Rays Arriving from the Crab Nebula. J. L. OSBORNE and E. ROBERTS 340
OG-93	Acceleration and Propagation of High Z Cosmic Rays in a Pulsar Environment. V. K. BALASUBRAHMANYAN, J. F. ORMES and M. J. RYAN 344
OG-94	Cosmic Radiation from Pulsars. K. M. V. APPARAO and T. N. RENGARAJAN. Abstract 349
OG-95	Pulsars and the Cosmic Ray Spectrum. T. N. RENGARAJAN 350
OG-96	A Radiation Mechanism for Pulsars. I. LERCHE 354
OG-97	On the Problem of Cosmic-Ray Astronomy—I. YASH PAL. Abstract 359
OG-98	On the Problem of Cosmic-Ray Astronomy—II. YASH PAL. Abstract 360
OG-99	A Possible Origin of Metallic Elements in Population II Stars. S. HAYAKAWA. Abstract 361
OG-100	Extragalactic Cosmic Rays. K. BRECHER and G. BURBIDGE 362
OG-101	The Nature and the Origin of the Primary Cosmic Rays above 10^{18} eV. K. MIZUTANI and K. MORI. Abstract 368
OG-102	The Origin of Cosmic Rays at Ultra High Energies. V. S. BEREZINSKY and G. T. ZATSEPIN. Abstract 369
OG-103	About age of Ultra-high Energy Cosmic Rays. G. E. KOCHAROV and Yu. N. STARBUNOV. Abstract 370
OG-104	Superhigh-Energy Cosmic Rays. O. P. PRILUTSKY and I. L. ROSENTAL. Abstract 371

	Page
OG-105 Radionuclide Production by Cosmic Rays in Lunar Rocks. K. ITO, H. YAMAMOTO and H. OKAZOE	372
OG-106 Cosmic Ray Propagation and Source Distribution. R. E. LINGENFELTER and R. RAMATY	377
OG-107 Propagation of Cosmic Rays Using Two Component Models of the Interstellar Medium. T. N. RENGARAJAN, S. A. STEPHENS and R. P. VERMA. Abstract	383
OG-108 The Effect of Ionisation Loss on the Energy Spectra of Cosmic Ray Nuclei Undergoing Fermi Acceleration. S. RAMADURAI	384
OG-109 Scattering of Higher Energy Cosmic Rays. D. B. MELROSE	390
OG-110 Comments on a Model of the Well Ordered Component of the Magnetic Field in the Galactic Disk. K. O. THIELHEIM, G. WENNER, W. H. STEEB, J. VOSS and H. J. KUCKHOFF	395
OG-111 The Effect of Galactic Magnetic Field Line Wandering on Cosmic-Ray Parameters. F. C. JONES	396
OG-112 Mechanism for Confinement of Cosmic Rays in the Galaxy. J. R. JOKIPII	401
OG-113 On the Galactic Radio Halo. R. COWSIK and J. D. SULLIVAN. Abstract	407
OG-114 Some Cosmic Effects of the Finite Rest-Mass of the Wave Quantum. K. D. COLE	408
OG-115 Cosmogonical Aspect of Primary Cosmic-Ray Investigations. R. B. SALIMZIBAROV. Abstract	414
OG-116 Transfer Effects on Lines and Continuum in Optically Thick X-Ray Sources. J. E. FELTEN and M. J. REES	415
OG-117 Superheavy Elements in Cosmic Rays. D. C. PEASLEE	419
OG-118 Theory of Narrow-Angle Cosmic Ray Anisotropies. S. C. BARROWES	423
OG-119 An Explanation of the Break in the Primary Spectrum. S. C. BARROWES	429

