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Cosmic Rays in Magnetospheres of the Earth and other Planets (Astrophysics and Space Science Library)

Lev Dorman
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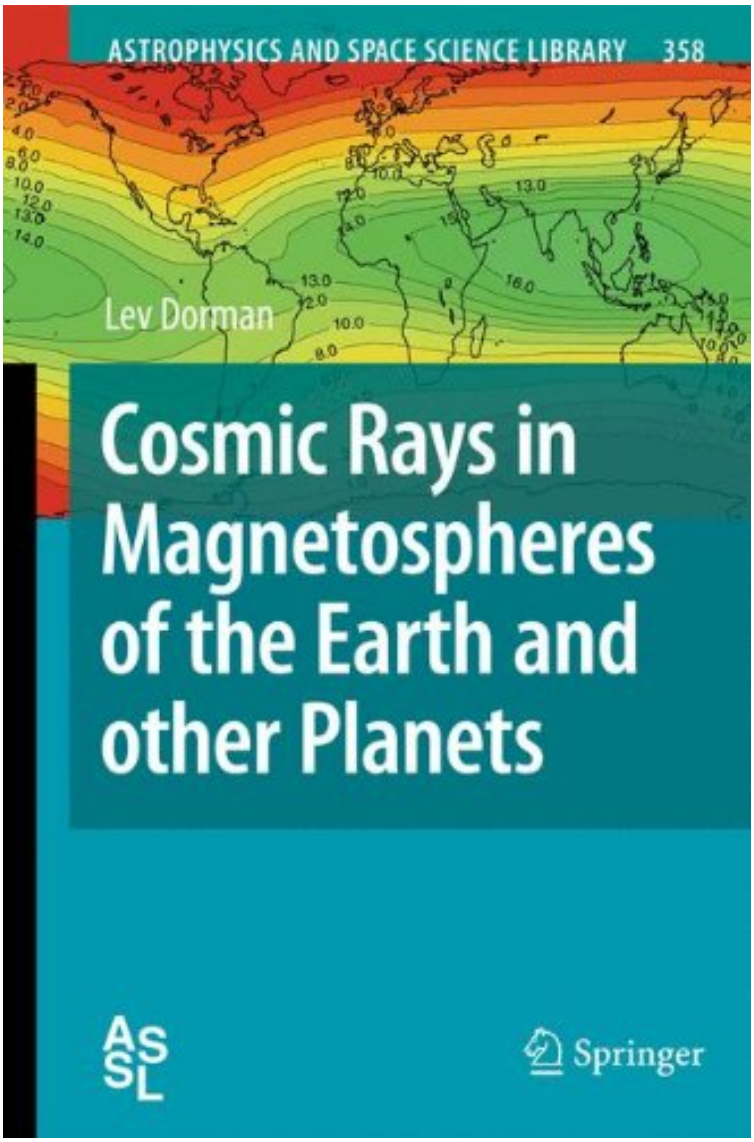

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Lev Dorman : Cosmic Rays in Magnetospheres of the Earth and other Planets (Astrophysics and Space Science Library) before purchasing it in order to gage whether or not it would be worth my time, and all praised Cosmic Rays in Magnetospheres of the Earth and other Planets (Astrophysics and Space Science Library):

The problem of cosmic ray (CR) geomagnetic effects came to the fore at the beg- ning of the 1930s after the famous expeditions by J. Clay onboard ship (Slamat) between the Netherlands and Java using an ionization chamber. Many CR la- tude expeditions were organized by the famous scientists and Nobel Laureates R. Millikan and A. Compton. From the obtained latitude curves it follows that CRs cannot be gamma rays (as many scientists thought at that time), but must be charged particles. From measurements of azimuthally geomagnetic effect at that time it also followed that these charged particles must be mostly positive (see Chapter 1, and for more details on the history of the problem see monographs of Irina Dorman, M1981, M1989). The ?rst explanations of obtained results were based on the simple dipole - proximation of the geomagnetic ?eld and the theory of energetic charged particles moving in dipole magnetic ?elds, developed in 1907 by C. Stormer to explain the aurora phenomenon. Let us note that it was made about 5 years before V. Hess discovered CRs, and received the Nobel Prize in 1936 together with K. Anderson (for the discovery of CR and positrons in CR).

From the Back CoverThis monograph describes the behaviour of cosmic rays in the magnetosphere of the Earth and of some other planets. Recently this has become an important topic both theoretically, because it is closely connected with the physics of the Earths magnetosphere, and practically, since cosmic rays determine a significant part of space weather effects on satellites and aircraft. The book contains eight chapters, dealing with The history of the discovery of geomagnetic effects caused by cosmic rays andtheirimportance for the determination of the nature of cosmic rays or gamma rays The first explanations of geomagnetic effects within the framework of the dipole approximation of the Earths magnetic field Trajectory computations of cutoff rigidities, transmittance functions, asymptotic directions, and acceptance cones in the real geomagnetic field taking into account higher harmonics Cosmic ray latitude-longitude surveys on ships, trains, tracks, planes, balloons and satellites for determining the planetary distribution of the intensity of cosmic rays and how it changes with time Geomagnetic time variations of cosmic rays caused by the changing of internal sources of Earths main magnetic field and variable magnetospheric current systems Magnetospheric models and how to check them by galactic and solar cosmic rays The behaviour of cosmic rays in the atmospheres and magnetospheres of Venus, Mars, and Jupiter. The work concludes with a discussion of future developments and unsolved problems and contains a list of about thousand full references. This book will be of great interest to experts and students in cosmic ray research, solar-terrestrial physics, magnetosphere physics, and space physics.