

ASTROPHYSICS AND SPACE SCIENCE LIBRARY

COSMIC RAYS IN ATMOSPHERE AND UNDERGROUND

PROF. LEV I. DORMAN

This book consists of four parts. In the 1st part (Chapters 1-4) a full overview is given of the theoretical and experimental basis of Cosmic Ray (CR) research in the atmosphere and underground for Geophysics and Space Physics; the development of CR research and a short history of many fundamental discoveries, main properties of primary and secondary CR, methods of transformation of CR observation data in the atmosphere and underground to space, and the experimental basis of CR research underground and on the ground, on balloons and on satellites and space probes.

The 2nd part (Chapters 5-9) is devoted to the influence of atmospheric properties on CR, so called CR meteorological effects; pressure, temperature, humidity, snow, wind, gravitation, and atmospheric electric field effects. The inverse problem - the influence of CR properties on the atmosphere and atmospheric processes is considered in the 3rd part (Chapters 10-14); influence on atmospheric, nuclear and chemical compositions, ionization and radio-wave propagation, formation of thunderstorms and lightning, clouds and climate change.

The 4th part (Chapters 15-18) describes many realized and potential applications of CR research in different branches of Science and Technology; Meteorology and Aerodrome Service, Geology and Geophysical Prospecting, Hydrology and Agricultural Applications, Archaeology and Medicine, Seismology and Big Earthquakes Forecasting, Space Weather and Environment Monitoring/Forecasting.

The book ends with a list providing more than 1,500 full references, a discussion on future developments and unsolved problems, as well as object and author indices. This book will be useful for experts in different branches of Science and Technology, and for students to be used as additional literature to text-books.

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