

Review on book in NOVA science publishing house

Cosmic Ray History

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The book is very useful and comprehensive review of the milestones and of selected important results in cosmic ray (CR) physics obtained since its discovery until present, in the series of Space Science, Exploration and Policies of NOVA.

Division into five parts including the chapters within each of the part, is done based on extensive and detailed knowledge of the important subjects related not only to CR physics, but also to high energy physics, physics of the atmosphere, space plasma physics etc., by the authors. Very useful is also review of the history of CR studies in various countries and in laboratories, in the subchapters of the Appendix.

Book is not only surveying the history of CR research and current status of knowledge, but inside the individual chapters there are also mentioned the tasks of the study for future. Interesting is also the conception of the book. Along with the scientific results, description of the physics behind as well as of the experimental devices developed and used over more than a century, there are also stated „links“ to other subjects like to the philosophy in the preface. Important parts are devoted to the works of individual scientists with their pictures/portraits.

After the review of activities and fundamental results in the early history of CR research, the authors are discussing the evolution of the experimental effort in studies both of secondary and of primary CR. The networks of ground based measurements is the central point of part II. CR studies contributed significantly to elementary particle physics studied later in accelerator experiments, and still, in the extremely high energies not accessible by accelerators, the CR is the unique source of information. Part III deals with that subject including the accelerators and high energy physics experiments.

Studies of primary CR variations using ground and underground based detectors require to deconvolute from the measurements the atmospheric (and, especially at lower energies) the magnetospheric effects. The evolution of understanding the physical state of atmosphere and its effects on CR measured at/below Earth's surface and within the atmosphere is discussed in part IV. The inverse problem, namely estimating atmospheric conditions from CR measurements is described in the last chapter of that part.

CR flux was found also to have influence on atmospheric processes. Production of cosmogenic nuclei, effects on atmospheric electric field, on the ionosphere and related conditions for electromagnetic wave propagation, on chemical processes and on cloud coverage and climate, on space weather effects etc. belong to the topical subjects of CR studies. Part V presents the history of research and current status of our knowledge on the CR induced processes in the atmosphere of Earth.

The Appendix summarizes the history of activities/measurements and obtained results from CR stations operating in various countries/laboratories. Special attention is devoted to neutron monitors and to the high mountain observations. In addition, the balloon experiments are mentioned too.

Book will serve for wide scientific community, students, teachers, as a detailed guide over the history of more than 100 years of cosmic ray research. The extensive lists of references on various aspects of CR research is its important constituent.