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Sputnik – 1957 and Cosmic Ray Studies in USSR-Russia for 50 Years

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Abstract content

Space era for cosmic ray physics began in 1957, when Soviet Union launched the first satellite in October. The first experiment for cosmic radiation study was conducted inboard Satellite -2 by prof . Sergey Vernov from Moscow State University. He installed inboard this satellite the simple Geiger counter to measure fluxes of cosmic rays above the Earth's atmosphere. Both this experiment and others inboard American «Explorer-1» and soviet Satellite -3 lead scientists to understanding of quite new phenomena in the Earth's environment – Radiation belts – energetic particles trapped in the magnetic field. The consequent history of cosmic radiation study in space included experiments on board many other satellites and space probes both near the Earth and in the interplanetary space and covered a wide energy range from plasma and up to galactic cosmic rays around «the knee». These space experiments gave for scientists the unique possibility to study physics phenomena and characteristics of galactic, solar and anomalous cosmic rays which couldn't be provided by on ground and balloon measurements. Among them , for example, energy spectra of galactic cosmic rays up to «the knee» energy ($\sim 10^{15}$ eV) conducted on board soviet satellites «Proton», definition of charge state of anomalous component of cosmic rays and many others. There is a very powerful perspective for the future of cosmic ray space experiments which include many actual aspects of modern astrophysics. Among them – dark matter search, GZK cutoff, composition of «the knee», solar particle acceleration and others.

If this papers is presented for a collaboration, please specify the collaboration

Summary

Reference

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