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Abstract number: S4-38

Transport

45 min. overview talk

The heliospheric modulation of cosmic rays

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Galactic cosmic rays serve as probes of solar activity and solar related changes in the heliosphere, as well as indicators of some of the main features of the heliosphere. By observing them over a wide range of energies on various spacecraft and at Earth, a better understanding is gained about heliospheric features, the basics of cosmic ray transport, modulation, acceleration and various heliospheric phenomena such as the 11-year and 22-year modulation cycles. Significant progress is being made in this field, stimulated by observations in the outer heliosphere by the two Voyager spacecraft and in the inner heliosphere by ULYSSES, PAMELA, STEREO and other space missions. Correspondingly, progress in turbulence and diffusion theory and the numerical modelling of cosmic rays in the heliosphere is also made. For this presentation a review will be given of the basic theory behind the modulation of cosmic rays in the heliosphere to serve as an introduction to this topic.