

# Variations of cosmic ray flux: From decades to millennia

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Galactic cosmic rays are subject to modulation in the heliosphere because of different processes, e.g., diffusion/convection and adiabatic deceleration in solar wind with frozen-in magnetic field, as well as charge-dependent drift effects. While sophisticated theoretical models have been developed corresponding to advanced understanding of the modulation process, they can be hardly applied to the past when only very limited, and mostly indirect, information exists on the solar/heliospheric parameters. In this case, special efforts should be taken to study the modulation. We apply such methods, based on reasonable simplification and coarsening of full models, to the study of heliospheric modulation at different time scales, and discuss the main heliospheric parameters of the cosmic ray modulation. We present some results of the long-term modulation study covering the time scales from a solar cycle to the millennial scale.