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The Effect of a Dynamic Inner Heliosheath Thickness on Cosmic Ray Modulation

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The time-dependent modulation of galactic cosmic rays in the heliosphere is studied over different polarity cycles by computing 2.5 GV proton intensities using a two-dimensional, time-dependent modulation model. By incorporating recent theoretical advances in the relevant transport parameters in the model we showed in previous work that this approach gave realistic computed intensities over a solar cycle. New in this work is that a time-dependence of the solar wind termination shock (TS) position is implemented in our model to study the effect of a dynamic inner heliosheath thickness (the region between the TS and heliopause) on the solar modulation of galactic cosmic rays. The study reveals that changes in the inner heliosheath thickness, arising from a time-dependent shock position, does affect cosmic ray intensities everywhere in the heliosphere.

Collaboration

– not specified –

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