

Regularities in the occurrence of relativistic solar proton events

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Abstract. The relativistic solar protons are registered by ground based detectors in rather rare events called GLE (Ground Level Enhancements). The GLE have a number of peculiar features distinguishing them from the lower energy solar proton events (SPE). For instance GLEs tend to appear by groups divided by interval of one or several day as the mean rate of their occurrence is one per year. 60 percents of GLEs occurred during Forbush-effects that specifies possible connection with CMEs from the previous flares on the Sun.

And a certain regularity of these events is noticed: besides of known tendency of SPEs to appear at rising and decline phases of solar cycles, the GLEs occurred during maxima of even 20 and 22 cycles. A possible reason for such a regularity related to the cyclic evolution of coronal holes as structures of the open coronal magnetic fields on the sun are discussed.

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