SOURCES OF EFFECTIVE PARTICLE ACCELERATION IN SOLAR FLARES: STOCHASTIC ASPECT

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This investigation is a continuation of the statistic analysis of the Solar Proton Event Catalogue. We studied spectra of proton growing/increases, which are indentificated with the logarithm of the particle fluxes ratio above the 100 and 10 MeV, i.e. with value of $\delta = \lg(F_{100}/F_{10})$, for 172 powerful events when conditions for particles to leave the corona and to propagate into interplanetary space are auspicously/opportunely. Distribution of number of flares over the δ is Gaussian with comparatively small spread over the δ. Its maximum corresponds to an excess of the maximal flux at 10 MeV above the 100 MeV flux by a factor of 30. An existence of a distilled/definite spectrum is an evidence for afact that noth the soft and the harder protons are accelerated effectively during the explosive phase of the flare rather due to one/single mechanism. Low height of a location of the general acceleration follows from a carried out by us study of flare loop sizes for M2 - X4 events registered by HXT Yohkoh at the range above 50 keV. There is some excess of the softer events out of the Gaussian distribution. During these flares post-eruptive phenomena are well expressed. For them the value δ does correlate with an introduced by us total duration of the flare. Thus, during solar flares there two sources of particle acceleration, workig at the explosive and post-eruprive phases at low and large heights correspondingly. In the second of the sources, directly seen during some prolonged flares and a "filament ejection"-like phenomena, protons are accelerated only to energies of 10-30 MeV.