The simulation of solar flares high energy gamma-emission.

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Abstract

The simulation results of high energy (E>30 MeV)gamma-emission generation during solar flares are presented. The calculations were created out for the isolated magnetic tube and for the conditions of solar magnetic arc system. The gamma-emission temporal structure and spectral characteristics can be obtained for different magnetic field configurations and with the account of accelerated particles beam angle distributions and the observer situation according to the gamma-quanta generation region.

The comparison of simulation and experimental data show, that the existence of the separated sharp bursts of gamma-emission in the time row of 26.03.91 flare can be explained by the additional (repeated) acts of particles acceleration. Only in this case we can obtain the satisfactory coincidence of model and experimental time rows. For the explanation of separated gamma-emission bursts by the change of plasma turbulence level or by the change of matter density, the sharp change of these parameters by the three orders of magnitude is necessary, which is unlikely.