Qualitative estimation of magnetic storm efficiency in producing of the relativistic electron flux in Earth's outer radiation belt by means of geomagnetic pulsations

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A comparative analysis of ground-based data on geomagnetic pulsations and the over 2MeV-energy electron flux data obtained by GOES satellites is done. For a measure of the magnetic storm efficiency in the relativistic electron flux producing we use a ratio of daily-average electron flux, which is registered during the recovery phase, to the mean pre-storm electron flux. We find that the exceeded pre-storm level electron flux's increases are observed during 55-65 percent of magnetic storms. A necessary condition for storm to be "effective" is a generation of the "seed" electrons, and then these electrons must be accelerated up to relativistic energy. In this paper, we show that the irregular geomagnetic Pi1 pulsations, which are registered during the main and early recovery phases of magnetic storm, may be an indicator of the process of the "seed" electron generation in magnetosphere. Some mechanisms for "seed" electron acceleration to relativistic energies regard Pc5-type geomagnetic pulsations as a necessary factor for energization electrons or as a factor promoting this process. The observed regimes of geomagnetic Pi1 and Pc5 pulsations for "effective" and "non-effective" magnetic storms are compared. It is shown that intensive Pc5 geomagnetic pulsations, registered in the vicinity of ground-based projection of geosynchronous orbit, are observed for the majority magnetic storms that are effective in the relativistic electron flux producing.