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Observations of terrestrial gamma-flashes by experiment «RELEC»

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Experiment «RELEC» on-board satellite «Vernov», launched July 2014, contains a suite of scientific instruments including gamma-spectrometer DRGE. This instrument include in turn quite a few phosphich type scintillating spectrometers and among those are four identical detectors of X-ray and gamma-ray detectors of type DRGE-1 with a total effective area of $\sim$500 cm2 , that have energy range from 10 keV to 3 MeV and a detector surface which is oriented towards nadir. DRGE includes also spectometer of electrons DGRE-2, that consists of three identical detectors of phosphich type with a geometrical factor of $\sim$ 2 cm2sr each, whose axis are forming cartesian system of coordinates that are related to the satellite velocity, Earth magnetic field and radial vectors.
The main scientific task of instrument DRGE is to study transient events, including terrestrial gamma-flashes (TGFs) and precipitations of relativistic electrons from the Earth magnetosphere. For this purpose DRGE detectors have two detection regimes. First one is a monitoring regime of detecting events with a time resolution of 1 second. The second registration regime allows to register each one of the incoming photons or relativistic electrons with the time stamp of $\sim$15 microseconds precision. These two registration regimes permit to carry out quite detailed timing analysis of transient events in gamma-regime, as well as to compare time profiles of the appropriate counting rates of detected transients with the results of other «RELEC» instruments for the same transient event. We note, that apart of DRGE spectrometers «RELEC» insludes also detector of optical and ultraviolet transient events, as well as low-frequency and radio-frequency analysers of electromagnetic field. Comparative correlating analysis of the data taken by the on-board instruments, as well as of the data ground based monitors of the thunderstorm electrical discharge activities are pre-planned.
In this talk we will present a first catalogue of TGFs detected by «RELEC» during its first three months of operation. Events that are included in this catalogue were selected by selection creteria of having at least 5 hard X-ray, or gamma-ray quanta during the time interval of 1 ms, simultaneously in at least two DRGE detectors. TGFs included in this catalogue, do have a typical duration of about 400 microseconds, and in total contain from 10 to 40 gamma-quanta. For each selected for catalogue TGF candidate, we will show light curve and a correlating data of other instruments of «RELEC» on-board «Vernov» satellite.