



Radiation in the Near-Earth Space: Results of RELEC Experiment on board Vernov Mission

Sergiy Svertilov (1,2) and the RELEC Team

(1) Skobel'syn Institute of Nuclear Physics, Moscow State University. Moscow, Russia (sis@coronas.ru), (2) Physical Department, Moscow State University. Moscow, Russia (sis@coronas.ru)

The main goal of RELEC mission is study of magnetosphere relativistic electron precipitation with its possible connection with Atmosphere transient luminous events as well as the monitor observation of radiation and electromagnetic environment in the near-Earth Space.

The RELEC set of instruments includes two identical detectors of X- and gamma-rays of high temporal resolution and sensitivity (DRGE-1 & DRGE-2), three axis directed detectors of energetic electrons and protons DRGE-3, UV TLE imager MTEL, UV detector DUV, low-frequency analyser LFA, radio-frequency analyser RFA, module of electronics intended for commands and data collection BE.

During the RELEC mission following experiments will be provided:

- simultaneous observations of energetic electron & proton flux (energy range ~ 0.1 - 10.0 MeV and low-frequency (~ 0.1 - 10 kHz) electromagnetic wave field intensity variations with high temporal resolution (~ 1 mcs);
- fine time structure (~ 10 mcs) measurements of transient atmospheric events in UV, X- and gamma rays with a possibility of optical imaging with resolution of \sim km in wide FOV;
- measurements of electron flux pitch-angle distribution in dynamical range from ~ 0.1 up to 10^5 part/cm²s;
- monitoring of charge and neutral background particles in different areas of near-Earth space.

The small satellite with RELEC instruments was successfully launched July, 8 2014. The mission orbit is solar-synchronous with apogee 830 km, perigee 640 km, inclination 98.4° and orbital period about 100 min.