



## **Study of the atmospheric flashes and man-made global phenomena ultraviolet and infrared glow of the night air on the board of satellite "VERNOV"**

Gali Garipov (1), Mikhael Panasyuk (1,2), Sergey Svertilov (1,2), Vitaliy Bogomolov (1,2), Vera Barinova (1), Kirill Saleev (1,2)

(1) Moscow State University, Skobeltsyn Institute of Nuclear Physics, Moscow, Russian Federation, (2) Moscow State University, Department of Physics, Moscow, Russian Federation

The set of scientific payload for optical observation on-board of "Vernov" satellite, launched at July 8, 2014, had measured transient (millisecond) flashes in the atmosphere in two wavelength bands: ultraviolet (UV, 240-380nm) and red-infrared (IR, 610-800nm). Global distribution of the flashes, their frequency and time parameters are studied in this work. Transient flashes measured from the satellite frequently were detected in high latitudes in winter time. Flashes in equatorial region were observed in series which were stretched along magnetic meridian and some of them were detected in cloudless regions. At night time when the Earth atmosphere was observed in nadir direction there were registered the optical signals of artificial origin, distributed along the meridian in an extended region of latitude in the Northern and Southern hemispheres of the Earth, modulated by low frequency and at the coincidence of the orbits with the geographic location of the powerful radio stations. Examples of the waveforms of such signals in UV and IR spectral ranges and their global distribution are presented in this presentation. Particular attention is paid to man-made causes of the glow in the ionosphere under the influence of the high power radio wave transmitters of low (LF) and high frequencies (HF). The height of the luminescence source and components of the atmosphere, which can be the sources of this radiation, are discussed.