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The background model in the energy range from 0.1 MeV up to several MeV for low altutude and high inclination satellites.

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The gamma-ray background physical origin for low altitude orbits defined by:ndiffuse cosmic gamma-emission, atmospheric gamma-rays, gamma-emission formed in interactions of charged particles (both prompt or activation) and transient events such as electrons precipitations and solar flares. The background conditions in the energy range from 0.1 MeV up to several MeV for low and high inclination low altutude orbits differ due frequency of Radiation Belts (included South Atlantic Anomaly) passes and cosmic rays rigidity. The detectors and satellite constructive elements activated by trapped in Radiation Belts or moving along magnetic lines charged particles.

The AVS-F apparatus was intended for the solar flares hard X-ray and gamma-ray emission characteristic studies and for gamma-ray bursts detection. It was installed onboard the specialized automatic station CORONAS-F and operated since july, 2001 up to December, 2005. The onboard calibration was made every mounth due to 11 background lines. The orbit inclination of CORONAS-F satellite was ˜82.5 grad and it passed through the Earth radiation belts 4 times per 90 min. In this case the gamma–events observations are possible only in equatorial orbit parts or polar caps regions and this orbits part passing duration is not enough for activation lines de-excitation. For this reason it is possible to use the background count rate temporal profile approximation by 4-5 order polynomials in equatorial regions, and 1-3 order polynomials or constant in polar caps. The polynomials' coefficients supposed similar for identical spectral channels for each analyzed equatorial part taken into account normalization coefficients defined due to Kp-indexes study within period corresponding calibration coefficients being approximately constants.

Presentation type

Section talk (10+5 min)

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