

# Gamma-quanta onboard identification in the GAMMA-400 experiment using the counting and triggers signals formation system

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GAMMA-400 (Gamma Astronomical Multifunctional Modular Apparatus) will be the new generation satellite g-observatory. Gamma-telescope GAMMA-400 consists of anticoincidence system (top and lateral sections - ACtop and AClat), the converter-tracker (C), time-of-flight system (2 sections S1 and S2), position-sensitive calorimeter CC1 makes of 2 strips layers and 2 layers of CsI(Tl) detectors, electromagnetic calorimeter CC2 composed of CsI(Tl) crystals, neutron detector ND, scintillation detectors of the calorimeter (S3 and S4) and lateral detectors of the calorimeter (LD). All detector systems ACtop, AClat, S1-S4, LD consist of two BC-408 based sensitive layers of 1 cm thickness each. Three apertures provide events registration both from upper and lateral directions. The main aperture provides the best angular (all strip layers information analysis) and energy (energy deposition in the all detectors studying) resolution. Gamma-telescope GAMMA 400 is optimized for the gamma-quanta and charged particles with energy 100 GeV detection with the best parameters in the main aperture. Triggers in the main aperture will be formed using information about particle direction provided by time of flight system and presence of charged particle or backsplash signal formed according to analysis of energy deposition in combination of both layers anticoincidence systems ACtop and AClat individual detectors. In the additional aperture the particles identification is provided by analysis of signals corresponding to energy deposition in the individual detectors S2, S3 and fast signals from CC1 individual detectors discriminators. Low energy (0.2 - 10 MeV) in the lateral aperture photons recognizing by using simple anticoincidence signals from the individual detectors of LD. Gamma-quanta of higher energies are identified using energy deposition in the individual detectors of S3, S4, LD and fast signals from CC2 individual detectors discriminators. The results of anticoincidence system individual detectors thresholds are discussed for the main, additional and lateral apertures.

## Presentation type

Section talk (10+5 min)

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