

SMALL-SIZED AND LOW-POWERED OF A SATELLITE TELESCOPE - SPECTROMETER OF CHARGED PARTICLES*

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The project small-sized, small weight and low-powered of a satellite telescope-spectrometer of charged particles is offered. The device consists of two silicon detectors, arranged sequentially concerning a particle flux, and then scintillation detector. The silicon detectors have depth within the limits of 150-300 microns and fissile area 5 cm^2 . The scintillation detector consists of a chip CsJ (TI) and photoconverter, which role executes the same silicon detector. The measurement $\Delta E1 - \Delta E2 - E$ allows to identify signals from different particles: electrons, protons and more massive ions. The essential difficulty is connected to necessity of simultaneous fulfilment for silicon detectors of two conflictings objective: the large active area and high responses on a charge suffices which should provide reliable registration of high energy electrons. The escaping of this inconsistency is retrieved in division of the detector into separate sections, the signals from which strengthen in different channels and then special mode are admixed. It allows in N of time (N - number of sections) to reduce an electrical detector noise and channel of amplification. Therefore silicon detectors are made as matrix 2x2 units.

If necessary to determine angular distributions of particles silicon detectors place on definite distance from each other, that allows to conduct measurements in 16 solid angles.

Experimental outcomes on the obtained matrixes: an electrical noise of each matrixes units is 11 keV, energy resolution on α -particles ^{241}Am - 23 keV. The frequency of spurious noise impulses with energy is higher 15 keV makes less than 1 for 5 minutes. Such characteristics allow confidently to abjoint signals of mip-particles from electric noises.

The channels of processing of signals of silicon detectors have the following characteristics: initial intake noise is 7 keV, declination of a noise performance 15 eV/pF at time of formation $\tau=3 \text{ }\mu\text{S}$. A volume range not less than 55 dB. The computational volume of detectors and analogue part of an electronics engineering of a telescope - spectrometer makes no more 0,5 litre, weight - less 0,5 kg and consumed power - about 1 W.

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