

ASIC for calorimetric measurements in astrophysical experiment NUCLEON

Saturday, 10 October 2015 10:45 (15)

The main goal of the NUCLEON satellite mission is the direct measurements of the elemental energy spectra of high-energy (10^{11} - 10^{15} eV) cosmic rays. The analog 32 channel ASIC with unique high dynamic range (1 – 40 000 mip) has been developed for the electromagnetic minicalorimeter of the NUCLEON project, of about 3000 channels in total. The ASIC allows to record signals of relativistic particles and nuclei with a charge from $Z = 1$ up to $Z > 50$ from silicon detectors, having capacitances up to 100 pF. The transfer function of charge sensitive amplifier (CSA), having two subranges of various gains, allowed to reach high dynamic range of the readout electronics. Given are the design as well as main experimental results.

Presentation type

Section talk (10+5 min)

Primary author(s) : Dr. VORONIN, Alexander (SINP MSU / NRNU MEPhI)

Co-author(s) : Dr. KARMANOV, Dmitry (SINP MSU); Dr. ATKIN, Eduard (National Research Nuclear University MEPhI); Mr. KUDRYASHOV, Iliya (SINP MSU); Dr. SHUMIKHIN, Vitaly (NRNU MEPhI)

Presenter(s) : Dr. VORONIN, Alexander (SINP MSU / NRNU MEPhI)

Session Classification : Methods of experimental physics - parallel V

Track Classification : Methods of experimental physics