

Studies of the 16- channel scintillation detector prototype with SIPM readout.

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Modern silicon photomultipliers are widely used in detectors of a wide class of experiments CERN, FAIR and NICA/Nuclotron. One example of their application is electromagnetic and hadron calorimeters. In the Laboratory of high energy physics, 16-channel prototypes of detectors (with SIPM readout from Ketek, Sensl and Hamamatsu) were developed which can be used both in Zero Degree calorimetry and for measuring the profile of a low-energy neutron beam. The paper presents the measurement of the noise characteristics of the detectors in the temperature range from 27.7 °C to 39.1 °C and the study of the response from the light source (LED) at different voltages. The correlation of the breakpoint of the noise characteristic with the breakdown voltage in the silicon photomultiplier was revealed. The prototype based on the Ketek SiPM was tested at the deuteron beam of the JINR Nuclotron at an energy of 4 GeV/nucleon. The time resolution and amplitude of the signal were estimated.

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