

Extending of the capabilities of the PRISMA-36 array through the introduction of a recording channel for studying neutron variations

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Since 2012 in the Experimental Complex NEVOD (MEPhI, Moscow), the PRISMA array for studying extensive air showers by detecting neutrons has been operated. In the array the en-detectors are used to detect neutrons. The detector consists of a thin (~ 30 mg/cm²) inorganic scintillator ZnS(Ag)+⁶LiF (the enrichment of Li with ⁶Li isotope is 90%) and photomultiplier FEU-200, which are installed inside a light-isolating cylindrical housing (heights of 570 mm and diameter of 740 mm). In 2023, it is planned to upgrade the array by replacing the photomultipliers, integrating amplifiers, digitizing electronics and high-voltage power supply system. Also during the array upgrade, a separate recording channel will be added in the detectors to study variations of the neutron background and processes affecting these variations. In the report we discuss the results of studying the applicability of the hemispherical photomultipliers EMI 9350 and D642 for the PRISMA-36 array, as well as the scheme and operating principals of the new recording channel.

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