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Project of a compact muon hodoscope for muonography of various objects.

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At present, the method of muonography (by analogy with X-ray diffraction radiography) of the internal structure of various natural and artificial objects using the natural flux of cosmic ray muons has become widespread.

To implement the method, in the Experimental complex NEVOD (NRNU MEPhI) R&D research to develop a compact and precise muon hodoscope (CMH) started in the SEC NEVOD (NRNU MEPhI). The design of the hodoscope is a multichannel detecting system consisting of four coordinate planes (CP) with an area of 1 m². Each CP includes two detecting layers with orthogonal orientation of scintillation strips. Each layer is formed from an assembly of 96 scintillation strips with light collection by WLS fibers (fibers) to silicon photomultipliers (SiPM). 32 SiPM signals are transmitted to an electronic readout board based on a 32-channel ASIC CITIROC 1A. Two layers of 96 strips with orthogonal orientation are combined in a single body of aluminum sheets.

The report discusses the features of CMH's detection system, as well as the results of testing a trial batch of scintillation strips and a trial batch of SiPM at the stands of SEC NEVOD.

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