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Measuring system of the NEVOD-EAS array

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The NEVOD-EAS detector designed for the registration of extensive air showers in the primary particle energy range of $10^{15} - 10^{17}$ eV is currently being created on the basis of the experimental complex NEVOD-DECOR. The measuring system of the NEVOD-EAS detector has a cluster organization and is located in the MEPHI campus (Moscow, Russia). In total, the detector includes 12 clusters of scintillation counters. The characteristic dimensions of the cluster are 20×20 m². The distance between the clusters is about 50 m. The detector area is 2×10^4 m².

The main detecting elements of the NEVOD-EAS are scintillation counters of the extensive air shower electron-photon component. These counters were previously used in the EAS-Top and KASCADE-Grande setups. Each counter consists of the NE102A plastic scintillator with the dimensions of $800 \times 800 \times 40$ mm³ and the Philips XP3462 photomultiplier enclosed inside the light-isolated pyramidal stainless steel housing. Four counters are combined into a detector station. Four detector stations form one NEVOD-EAS cluster.

Analog signals from the counters of the cluster come to the cluster local post (LP). Local post provides selection of events according to the intra-cluster trigger conditions, digitizes the amplitude information and transmits data to the central DAQ post.

The main functions of the central DAQ post are: synchronization of all NEVOD-EAS clusters, control of LP of all clusters, reception and storage of the experimental and monitoring data from the cluster LP.

The features of the NEVOD-EAS measuring system, which provides EAS detection, collection and primary processing of data, time synchronization of clusters and selection of events according to the data of individual clusters, are discussed. The results of testing of the counter elements, the readout electronics and the first detector cluster are presented.

Collaboration

– not specified –

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