Scintillation array of the Experimental Complex NEVOD for EAS investigations

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For studying muon bundles arriving at various zenith angles, at the experimental complex NEVOD-DECOR (MEPhI, Moscow) the method of the local muon density spectra (LMDS) is used. Estimation of the primary particle energy by means of this method has rather low accuracy ($\sigma(\lg E_0) \sim 0.4$) due to contribution of EAS registered at different distances from the axis to the events with a fixed local muon density. To reduce the primary energy estimation uncertainties, in 2015 the creation of the NEVOD-EAS shower array was started. The array will enable to determine size, arrival direction and axis position of the showers with energies in the range of $10^{15} - 10^{17}$ eV using a traditional method. NEVOD-EAS will include 10 clusters of scintillation detector stations with characteristic dimensions of 20×20 m^2 located at a distance of about 50 m from each other on the roofs of the University laboratory buildings. The total array area will amount to $\sim 2 \times 10^4$ m^2.

The detecting elements of the new shower array, the principles of organization of its registering and data acquisition systems are described. The results of studies of operating parameters of the array central part which includes 5 clusters of scintillation detector stations are discussed. Examples of extensive air showers events registered by the NEVOD-EAS array jointly with NEVOD and DECOR detectors are presented.