ЛАБОРАТОРИЯ ИНФОРМАЦИОННЫХ ТЕХНОЛОГИЙ

Wednesday, 9 October 2019, at 14.00
Room 310

1. V. Palichik, N. Voytishin

Particles trajectory reconstruction in the CMS experiment cathode-strip chambers and in the BM@N experiment drift chambers

The seminar will provide information on the work done during the reporting period and will give a brief description of the gathered results.

In the first part, the developed approaches for improving the reconstruction of the trajectory of a charged particle on a single layer of the cathode-strip chamber of the CMS experiment will be described. New approaches are designed to recognize overlapping signals, the number of which should increase with increasing luminosity at the Large Hadron Collider and with an increase in the transverse momenta of particles passing through the endcap of the experimental setup.

The second part of the report will present the stages of developing a complete reconstruction of particle trajectories in the drift chambers of the BM@N experiment, starting from hit reconstruction in a separate plane and ending with restoring the global track from data from several detectors. Along with this, many associated tasks were solved, such as geometric alignment of cameras at the software level; identification of noisy channels; determination of the optimal value of high voltage for drift chambers; Nuclotron beam momentum estimation. In addition to the standard detector performance parameters, examples of the use of tracks from drift chambers in analyzing physical data of the experiment will be presented.

2. Zuev M.I.

Research and educational activities on the HybriLIT heterogeneous platform

The report gives an overview of the work performed within the development and support of the software and information environment of the HybriLIT heterogeneous platform, including the installation, configuration, debugging and support of software for carrying out calculations on the HybriLIT heterogeneous platform (the education and testing polygon and the “Govorun” supercomputer) both for the NICA experiment and tasks of specialists from JINR laboratories and its Member States. Interim results of joint work with colleagues from the Laboratory of Theoretical Physics and the Laboratory of Information Technologies on the development of a set of programs for studying systems containing Josephson junctions are presented. Information on conducting training courses and master classes on parallel programming technologies held for a wide range of listeners from JINR, its Member States and third-party organizations will be provided as well.