



Contribution ID: 44

Type: **not specified**

MPD Detector at NICA, JINR, Dubna, Russia

Saturday, 21 September 2013 11:45 (30 minutes)

The main purpose of the report is to present NICA/MPD Project, particularly the Multi-purpose detector's structure and physical goals and also the current stage of its performance.

NICA is a new accelerator complex being constructed at JINR, Dubna, Russia. The global scientific goal of the NICA/MPD project is to explore the phase diagram of strongly interacting matter in the region of highly compressed baryonic matter. The study of hot and dense baryonic matter would provide relevant information on in-medium properties of hadrons and nuclear matter equation of state, de-confinement and/or chiral symmetry restoration,

phase transition, mixed phase and critical end-point and possible strong P- and CP violation.

In the first stage of the project are considered - multiplicity and spectral characteristics of the identified hadrons including strange particles, multi-strange baryons and antibaryons; event-by-event fluctuations in multiplicity, charges and transverse momenta; collective flows (directed, elliptic and higher ones) for observed hadrons. In the second stage the electromagnetic probes (photons and dileptons) will be measured. It is proposed that along with heavy ions NICA will provide proton and light ion beams including the possibility to use polarized beams.

The design concept of a detector which would be used to operate at NICA is a challenging task. The detector for exploring phase diagram of strongly interacting matter in a high track multiplicity environment has to cover a large phase space, be functional at high interaction rates and comprise high efficiency and excellent particle identification capabilities. It must also be based on the recent detector developments. The MPD detector matches all these requirements. It comprises the central detector and two forward spectrometers FS-A and FS-B (optional) situated along the beam line symmetrically with respect to the centre of MPD. The central detector consists of a barrel part and two endcaps located inside the magnetic field. The barrel part is a set of various detector systems surrounding the interaction point and aimed to reconstruct and identify both charged and neutral particles. The barrel part consists of tracker and particle identification system. The principal tracker is the time projection chamber (TPC) supplemented by the inner tracker (IT) surrounding the interaction region. Both subdetectors (IT and TPC) have to provide precise track finding, momentum determination, vertex reconstruction and pattern recognition. The high performance time-of-flight (TOF) system must be able to identify charged hadrons and nuclear clusters in the broad rapidity range and up to total momentum of 2 GeV/c. Another part of the MPD detector is the electromagnetic calorimeter. The main goal of the electromagnetic calorimeter (EMC) is to identify electrons, photons and measure their energy with high precision.

Primary author: Ms YORDANOVA, Lyubka (Member of MPD Collaboration, JINR, Russia)

Presenter: Ms YORDANOVA, Lyubka (Member of MPD Collaboration, JINR, Russia)

Session Classification: Talks and Discussions