Referee Report on the Project

“Multi-purpose detector (MPD) for studying the properties

of hot and dense baryonic matter at the NICA Collider Complex”



This is the largest project in the history of the Joint Institute for Nuclear Research. The team involves about 450 scientists coming from 16 institutions from Russia and from abroad. The project culminates the huge and long efforts of the JINR staff in the realization of NICA’s capacity.

 The physical program will be focused on studies of the nuclear matter at highest baryon density. The point, as realized recently, is that the most dramatic events in the collective behavior of the nuclear matter are expected at intermediate energies (typical of NICA) rather than at those highest. The expected new state of matter is not necessarily the long awaited quark-gluon plasma. Here is the discovery potential of NICA’s and its MPD.

 The uniqueness of the physical program to which MPD is focused is as follows:

* NICA with MPD will cover a little explored kinematical region of great baryon density. This region was not covered (was missed) in previous (CERN, BNL) experiments focused, on maximally high energies;
* NICA and MPD will enable detailed scanning between 4 and 11 GeV in the center-of-mass system;
* MPD has full azimuthal coverage and will measure most of the momentum range in the pseudorapidity interval -2<\eta<2;
* NICA will provide a wide range of beams from protons to gold ions, with record luminosity.

Apart from the above issues, studies of event- by-event fluctuations and correlations, the collective flow, strangeness production and femtoscopy will be on the agenda.

 Al that justifies the huge effort invested in the largest international endeavor. It will raise NICA and JINR to the rank of world leading high-energy centers.

I fully support the extension of the Project for the next 5 years.

 

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