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The Project NICA/MPD at JINR: Search for the Mixed Phase of Strongly Interacting Matter at Nuclotron-based Ion Collider fAcility

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Please give a brief summary of your poster

The Joint Institute for Nuclear Research (JINR) in Dubna is an international research organization established in accordance with the intergovernmental agreement of eleven countries in 1956. At the present time, eighteen countries are the JINR Member States and six countries, having the associated-member status. The JINR basic facility for high-energy physics research is represented by the 6AGeV Nuclotron which has replaced the old weak focusing 10GeV proton accelerator Synchrophasotron. The first relativistic nuclear beams with an energy of 4.AGeV were obtained at the Synchrophasotron in 1971. Since that time the study of relativistic heavy ion physics problems has been one of the main directions of the JINR research program. The new flagship of the Joint Institute for Nuclear Research is the NICA/MPD project. The main goal of the project is to start in the coming years experimental study of hot and dense strongly interacting QCD matter at the new JINR facility.

This goal is proposed to be reached by:
1) development of the existing Nuclotron accelerator facility as a basis for generation of intense beams over atomic mass range from protons to uranium and the polarized ions;
2) design and constraction of heavy ion collider (NICA) with maximum collision energy of sqrt (S_{NN}) =11 GeV and averaged luminosity 10^{27} cm^{-2} s^{-1} and
3) design and construction of multipurpose particle detector (MPD) at intersecting beams.

Realization of the project will lead to unique conditions for the world community research activity. The NICA energy regions is of major interest because the highest nuclear (barionic) density under laboratory conditions can be reached there. Generation of the intense polarized light nuclear beams aimed at investigation of polarization phenomena at the Nuclotron is foreseen.

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