



Contribution ID : 156

Type : Oral talk

Prospects for the measurement of electromagnetic probes in heavy-ion collisions at NICA energies

Friday, 2 December 2022 19:00 (15)

The future MPD experiment at NICA collider is designed to study heavy-ion collisions at $\sqrt{s_{NN}} = 4-11$ GeV. For this energy range, which corresponds to the highest net-baryon densities and modest temperatures, models predict a first order phase transition from hadronic matter to the new state of matter formed of deconfined quarks and gluons and existence of a critical end point. Measurements of electromagnetic probes such as the direct photons and dielectron continuum significantly extend the physics program of the MPD experiment. These penetrating probes are sensitive to the deconfinement and the chiral symmetry restoration and provide the most direct estimation of the system temperature in heavy-ion collisions. In this contribution, we present results of physics feasibility studies for the measurement of neutral mesons, direct photons and dielectron pairs using different experimental techniques with the MPD experimental setup in heavy-ion collisions at NICA energies.

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Session Classification : Heavy Ion Physics

Track Classification : Heavy ion physics