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ЛАБОРАТОРИЯ ТЕОРЕТИЧЕСКОЙ ФИЗИКИ
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Семинар
"ТЕОРИЯ АДРОННОГО ВЕЩЕСТВА ПРИ ЭКСТРЕМАЛЬНЫХ УСЛОВИЯХ"

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Robustness of the Baryon-Stopping Signal for the Onset of Deconfinement in HIC

The impact of the experimental acceptance, i.e. transverse-momentum (p_T) cut-off and limited rapidity region, on the earlier predicted irregularity in the excitation function of the baryon stopping is studied. This irregularity is a consequence of the onset of deconfinement occurring in the compression stage of a nuclear collision and manifests itself as a wiggle in the excitation function of the reduced curvature (C_y) of the net-proton rapidity distribution at midrapidity. It is demonstrated that the wiggle is a very robust signal of a first-order phase transition that survives even under conditions of a very limited acceptance. At the same time the C_y for pure hadronic and crossover transition scenarios become hardly distinguishable, if the acceptance cuts off too much of the low- p_T proton spectrum and/or puts too narrow rapidity window around midrapidity. It is found that the shape of the net-proton rapidity distribution near midrapidity depends on the p_T cut-off. This implies that the measurements should be taken at the same acceptance for all collision energies in order to reliably conclude on the presence or absence of the irregularity. An outlook is given to actual perspectives of this study in relation to the NICA MPD experiment.