

Baryon fluctuation signatures of the onset of deconfinement

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We predict an anomalous collision-energy dependence of proton-number fluctuations as a consequence of the onset of deconfinement in heavy-ion collisions at the nucleon-pair centre-of-mass energy (8 – 12) GeV. The effect arises from the change of properties of the effective degrees of freedom during the transition from confined and deconfined matter. The proposed interpretation provides a unified explanation of the collision-energy dependence of proton fluctuations together with the previously observed anomalies in hadron production, and yields semi-quantitative predictions without introducing parameters adjusted to the fluctuation data.

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