

Understanding rapidity fluctuations in the initial state

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Rapidity correlations are analyzed in a simple model, where in the initial stage multiple sources, extended in space-time rapidity, are formed. We show how the varying longitudinal extent of the sources generates correlations in the initial entropy deposition, which later contribute to the observed correlations in hadron production. Our analytic analysis allows to understand their structure and to identify the component due to the underlying fluctuation of the number of sources and the component from the genuine longitudinal fluctuations. Our results reproduce semiquantitatively the basic features of the recent measurements at the LHC.

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