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Type: **Talk**

Signals of initial state quantum entanglement in relativistic particle collision

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I will show thermodynamic entropy calculations based on charged particle multiplicity data from proton-proton collisions measured by ALICE at the LHC in comparison to entanglement entropy calculations based on initial state gluon distributions. The relative agreement of these distributions can be quantified by studying their higher order cumulants. The commonalities between the initial and final state suggest that entanglement could be a possible source for the seemingly thermal and collective behavior in small systems. I will pose the question on when such a picture could and will break down due to decoherence of the initial state. I will also show that rather simple additional final state measurements should be sensitive to gluon saturation, in particular when properly binned in rapidity space.

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Classification de Session: Track6-SmallSyst

Classification de thématique: Collective effects in small systems