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S-Matrix HRG description of light flavour hadrons and (anti-)(hyper-)nuclei production at the LHC

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The yields of light flavour hadrons and light (anti-)nuclei including (anti-)hypernuclei have been measured by the ALICE collaboration at LHC/CERN at various multiplicity bins in proton-proton, proton-lead and lead-lead collisions. It is observed that the strangeness and (anti-)nuclei production increase non-linearly with charged-particle multiplicity (dNch/dy) and is independent of the collision system. We compare the above data with the thermal model analysis that accounts for the exact conservation of quantum numbers such as strangeness and baryon number. The interactions among hadrons are included using the S-matrix corrections based on known phase shift analyses.

We show that the above thermal model can capture the observed properties of light flavour hadron yields as well as light (anti-)nuclei including anti-hypertriton as a function of charged-particle multiplicity.

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