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Universality of Hadronization Condition at RHIC and LHC[1]
MICHAL PETRAN, JOHANN RAFELSKI, University of Arizona — The hadronization analysis within non-equilibrium SHM has shown that across RHIC and LHC energy range, and across a wide range of centrality we find a universal intensive hadronization conditions of the particle source: pressure $P_h \simeq 80\mathrm{MeV/fm}^3$, energy density $\varepsilon_h \simeq 0.5\mathrm{GeV/fm}^3$ and entropy density $\sigma_h \simeq 3.3\mathrm{fm}^{-3}$. The parameters varying as a function of reaction energy and/or centrality are source volume dV/dy and strangeness saturation γ_s. This discovery allows to simplify the SHM approach: the principle of Universal Hadronization reduces the number of parameters within the non-equilibrium SHM. Two suffice at LHC and three are enough at RHIC to fully characterize all hadron production. We show this using the SHARE program: we prescribe the intensive properties of the fireball, and fit at LHC dV/dy, γ_s as a function of centrality, while at RHIC we must also introduce baryon–antibaryon asymmetry μ_B, where μ_S is fixed by $< s >=< \bar{s} >$. The other SHM parameters e.g. T, γ_q, are an output of this procedure, which works for all hadrons. The convergence for the most central collisions of $s/S \to 0.03$ confirms strangeness chemical equilibration in the deconfined QGP fireball hadron source.

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