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Reviewing hadron production in the SIS energy regime using new HADES Au+Au data

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Data on particle production in heavy ion collisions in the energy regime of 1-2 A GeV have been collected over almost three decades now. As most of the newly created hadrons are produced below or slightly above their free NN-thresholds, data are usually interpreted with the help of phenomenological models, rather than comparing to elementary reference measurements. Driven by advance in detector technology, more and more rare and penetrating probes have become accessible, and still keep challenging our knowledge about the properties of the created system and its dynamical evolution.

The recently collected HADES data from Au+Au collisions at 1.23 A GeV represents in this energy regime the most advanced sample of heavy ion collisions in terms of precision and statistics ($7 \cdot 10^9$ collected events). Using the yields and spectra of reconstructed hadrons (π^{+-} , K^{+-} , K_s^0 , Λ) provides therefore the optimal bases to test state of the art models and to question the extent of our present understanding of hadron production. This work has been supported by BMBF (05P12RFGHJ), Helmholtz Alliance EMMI, HIC for FAIR, HGS-HIRe.

On behalf of collaboration:

HADES

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