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Multiplicity and energy dependence of light charged particle production in ALICE at the LHC

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ALICE (A Large Ion Collider Experiment) is the CERN LHC experiment optimized for the study of the strongly interacting matter produced in heavy-ion collisions and for the characterization of the quark-gluon plasma (QGP).
ALICE has collected precision data at different energies for pp, p-Pb, Pb-Pb and Xe-Xe collisions: this unique set of data allows us to investigate bulk particle production for very different systems and compare them at similar multiplicities. In particular, light flavour particles, containing only u, d and s valence quarks, are the most copiusly produced and so they play a central role in the characterization of the bulk properties of the QGP, carrying essential information about the produced medium and reaction dynamics.
Part of this information is carried by the inclusive and identified transverse momentum distributions of light charged particles, measured over a wide p_{T} range thanks to the excellent tracking and particle-identification capabilities of the ALICE detector.
Such distributions show that at low to intermediate p_{T} charged particle production is governed by the collective expansion of the system. The chemical and kinetic freeze-out parameters of the system are extracted via statistical-thermal and combined blast-wave fits to the data in heavy-ion collisions and are compared to results obtained in pp and p-Pb collisions at similar multiplicities. At high p_{T}, typically above 5 GeV/c, a suppression of hadronic production, due to medium effects such as parton energy loss, can be observed. These effects can be investigated by calculating the nuclear modification factor, defined as the ratio between the p_{T} spectrum measured in nucleus-nucleus collisions and a reference spectrum in pp collisions scaled by the number of binary nucleon-nucleon collisions.
In this talk, we review the most recent ALICE results on the production of pions, kaons and protons, including transverse momentum spectra, yields, particle ratios, mean transverse momenta and nuclear modification factors, for various centrality/multiplicity classes.

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