

## Centrality dependence of observables in the core - corona model

To understand the centrality dependence of the measured observables, like the multiplicity  $\langle p_t \rangle$  and the elliptic flow of identified particles at midrapidity as well as the elliptic flow of charged hadrons, has been a challenge for theory since many years. Although the multiplicity of different particles in central collisions corresponds exactly to the expectation for a completely thermalized source the centrality dependence is incompatible with this assumption.

A while ago it has been realized that even in the most central collisions there remain particles (usually close to the surface of the interaction zone) which do not come to equilibrium (corona particles) whereas others come to a local equilibrium (core particles). Corona particles produce hadrons like pp collision. The relative fraction of corona particles can be calculated in the Glauber approach and increases with decreasing centrality? This variable core fraction is the origin of the centrality dependence of the observables.

The approach has no free parameter and reproduces quantitatively the experimental results. Especially it explains an observations which have been unexplained since quite a while: the enhancement of (multi) strange baryons and the fact that this enhancement becomes smaller at larger beam energies.

Recently this model has been extended to dynamical variables like the centrality dependence of  $\langle p_t \rangle$  and  $v_2$  of identified particles. The model reproduces quantitatively the centrality dependence of the elliptic flow of charged particles without any new parameter which has been considered so far as an observable which allows to fix the viscosity of a plasma. Our model shows that this centrality dependence can also be predicted assuming the same fraction of completely equilibrated core and not equilibrated corona particles which has been used to understand the centrality dependence of the multiplicity.

In the presentation we will display the model and make comparisons with the EPOS event generator which is based as well on the distinction between core and corona particles and describes the rapidity dependence of many observables. Then we demonstrate that the centrality dependence of all observables at midrapidity is well described in this approach, at SPS as at RHIC, and for CuCu as well as for AuAu. If data are available we will extend the model to LHC energies.

The interpretation of the results in physical terms concludes the presentation.

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