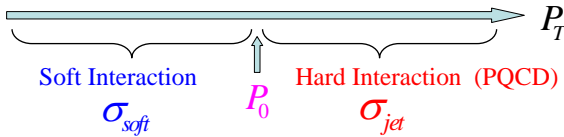# Hadron Productions at LHC Energies with HIJING2.0 Model

Wei - Tian Deng[1,2], Xin - Nian Wang[3,4] & Rong Xu[3]

1, FIAS, Germany. 2, School of Physics, Shandong Uni. China. 3, Institute of Particle Physics, CCNU, China. 4, LBNL, USA
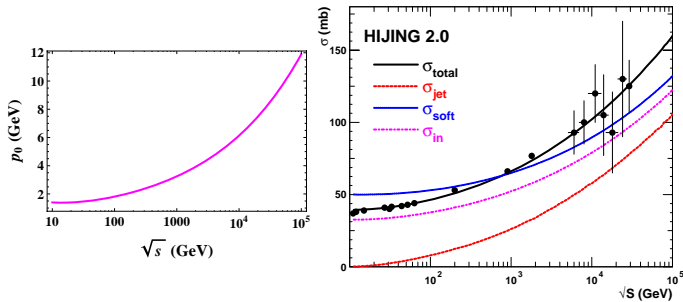
HIJING Model

• A+A collisions are decomposed into independent binary nucleon-nucleon collisions.

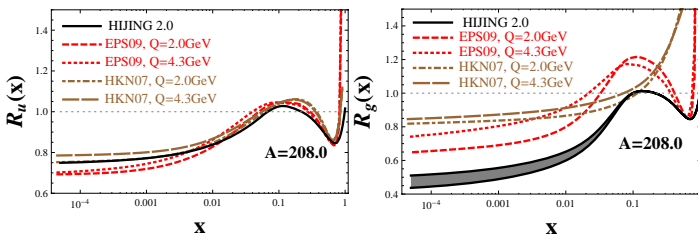• In two-component model, nucleon-nucleon collisions can be divided into soft and hard processes with Pt-cut P0.

P_T

Soft Interaction σ_{soft} P_0 Hard Interaction (PQCD) σ_{jet}

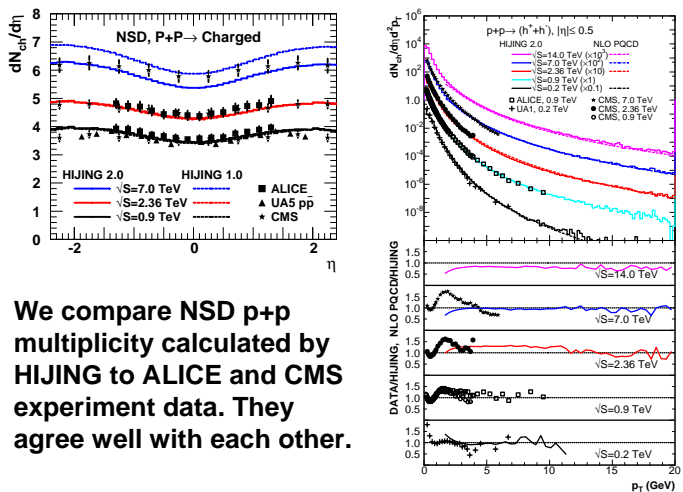## Main Parameters in HIJING and Their Update

1, PDFs are updated to GRV parameters.

2, P_0 and σ_{soft} are updated as energy dependence.

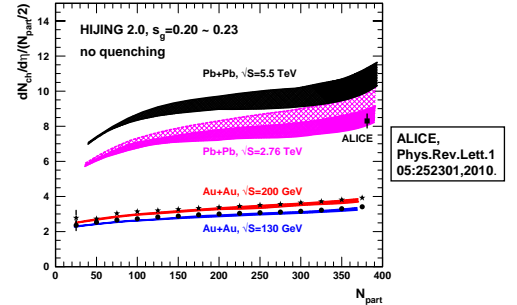3, New shadowing parameterization with strong gluon shadowing.

HIJING simulation for p+p collisions

We compare NSD p+p multiplicity calculated by HIJING to ALICE and CMS experiment data. They agree well with each other.
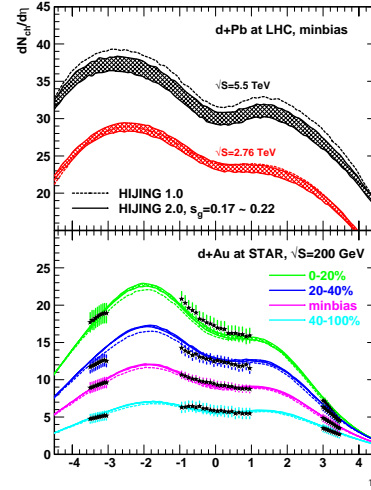
HIJING simulation for A+A collisions

ALICE, Phys.Rev.Lett.105:252301,2010.

• The bands come from the uncertainty of gluon shadowing, fitting to the error bar of experiment data from RHIC.

• Our prediction of multiplicity in Pb+Pb collisions at LHC is confirmed by ALICE data.

• Centrality dependence of multiplicity is reproduced well with b dependence of shadowing:

$$s(b) = s\frac{5}{3}(1 - b^2 / R_A^2)$$

HIJING simulation for d+A collisions

Reference

1. X.-N. Wang and M. Gyulassy, Phys. Rev. D44, 3501 (1991).

2. W.-T. Deng, X.-N. Wang & R. Xu, Phys.Rev.C83 014915 (2011).

3. W.-T. Deng, X.-N. Wang & R. Xu, arXiv:1012.1514[nucl-th].

Acknowledgement