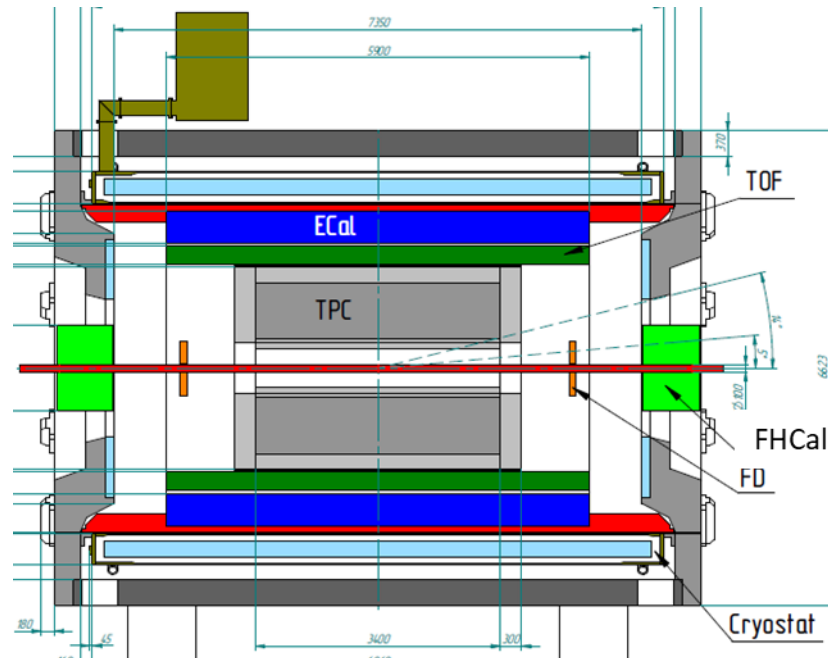


A brief overview of centrality measurements by different groups @MPD



Based on the report given by Grigory Feofilov at collaboration meeting
<https://indico.jinr.ru/event/1554/contributions/10374/>

Centrality codes we have right now

Centrality based on the number of charged particles in TPC

`get_multiplicity.C` from https://git.jinr.ru/nica/mpdroot/-/tree/dev/macro/physical_analysis/Flow

is it much different from

MC Glauber calculation for centrality at NICA <https://github.com/IlyaSegal/NICA>

How is centrality calculated at INR group?

https://github.com/qweek2/Centrality_NICA/tree/master

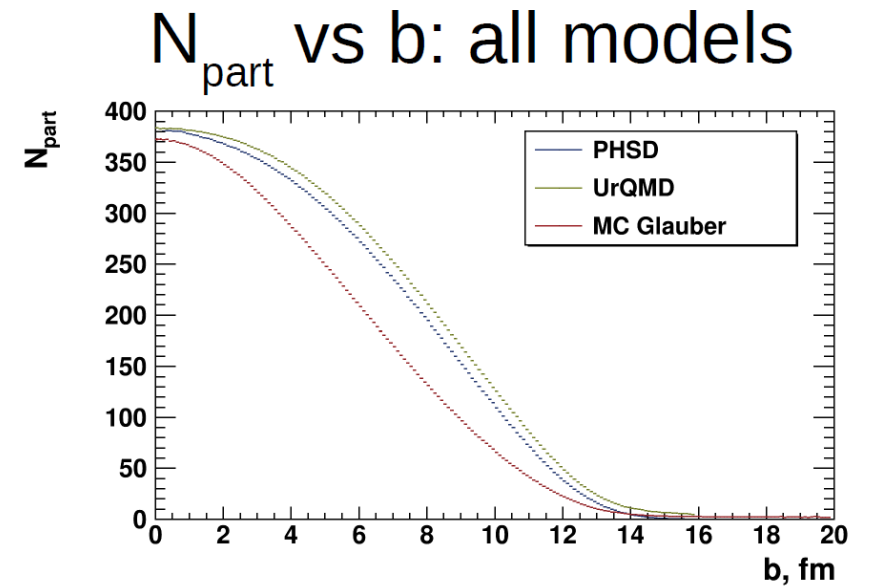
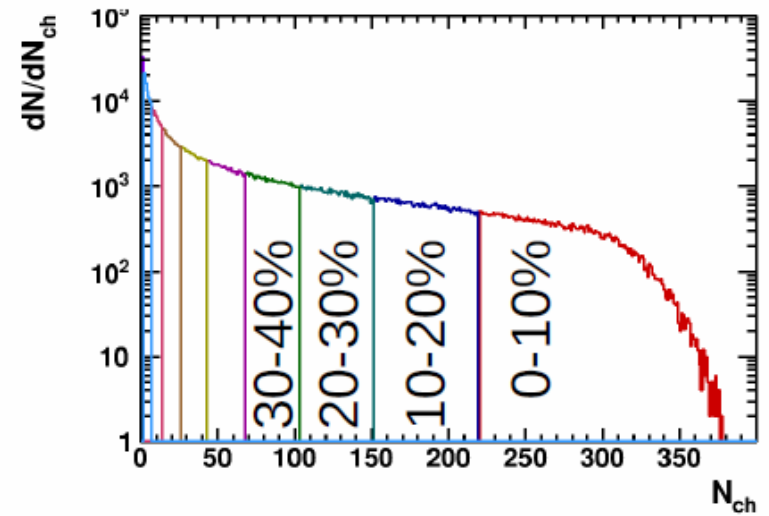
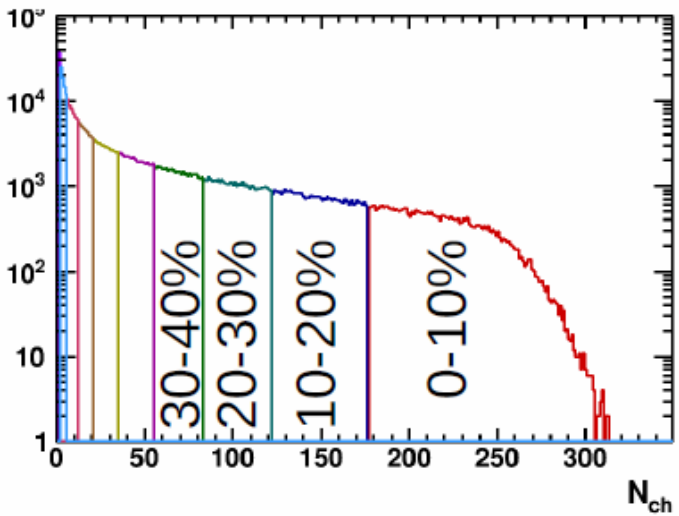
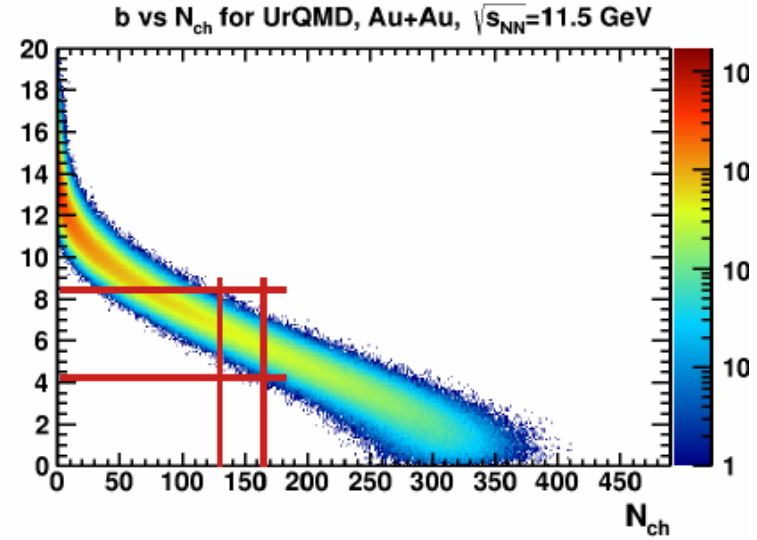
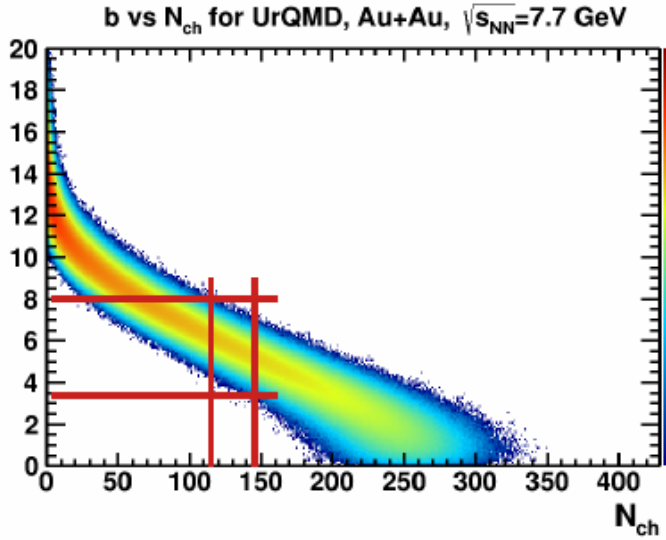
Both ways to calculate based on TPC and FHCaI

What definitions other groups use?

Can we trust to comparison of different groups analysis?

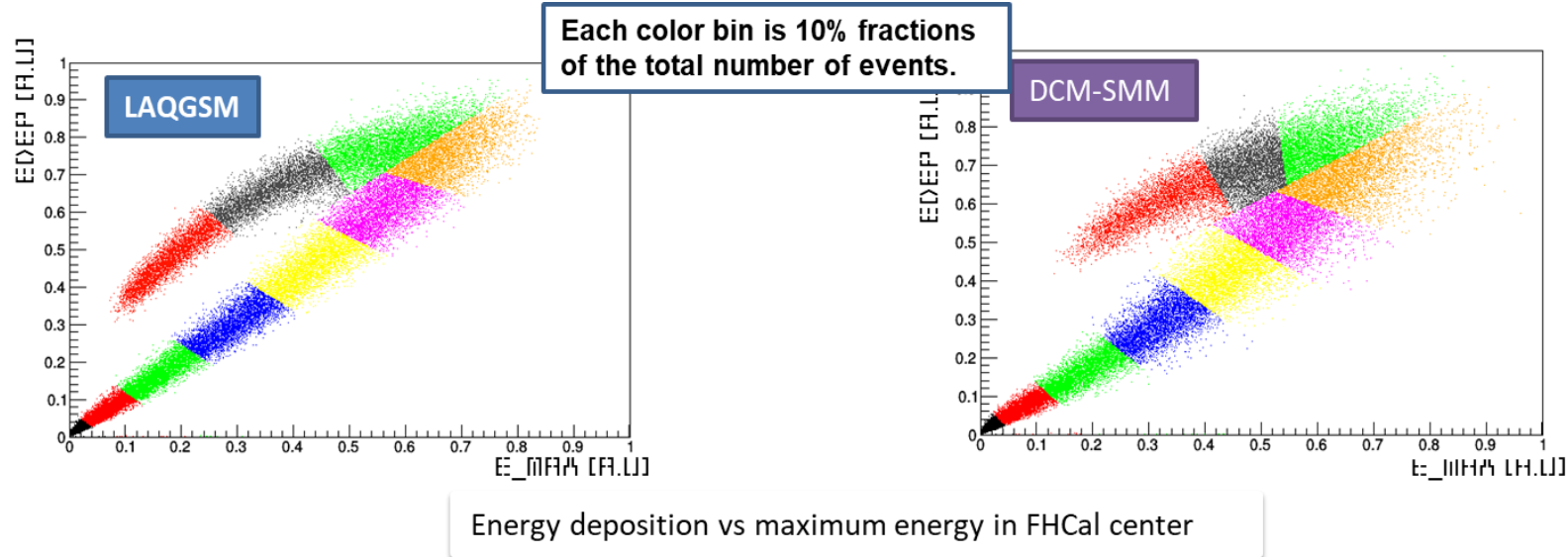
Based on several collision energies, different models

What models are used?
Is it from official MC production?
What parameters are used?

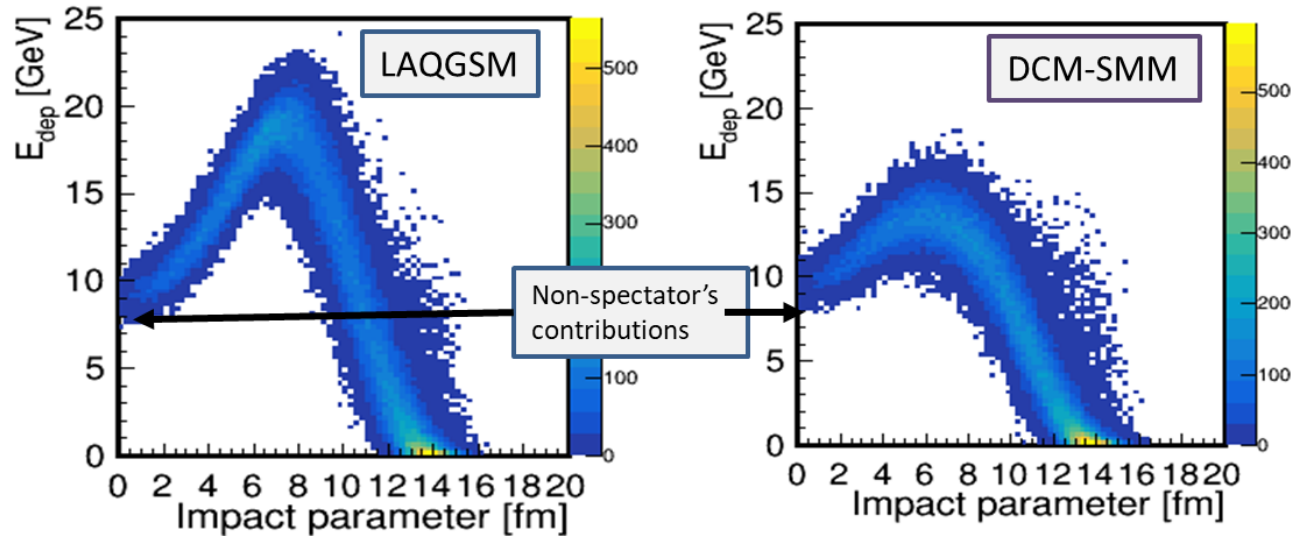


Based on one collision energy, two different models

What models are used?
Is it from official MC production?
What parameters are used?



$$\sqrt{s_{NN}} = 11 \text{ GeV}$$



Format of the DST matters

MpdGlobalTracks = MPDEvent->GetGlobalTracks();

old version of container,
results are not guaranteed, use on your own risk?

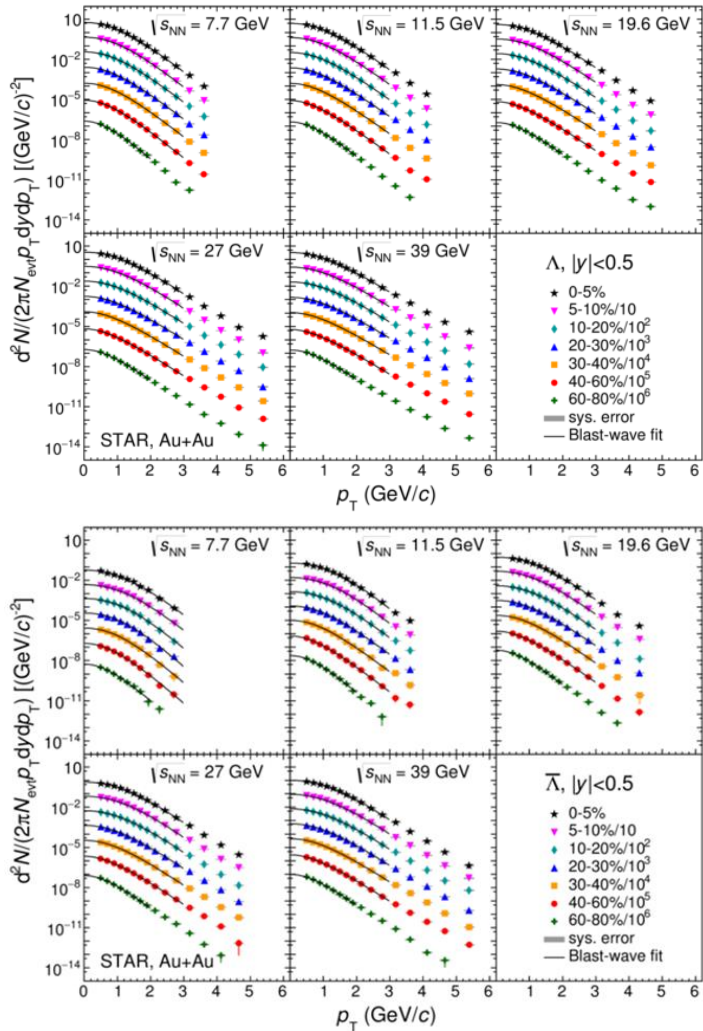
MpdTpcKalmanTrack

new version of container

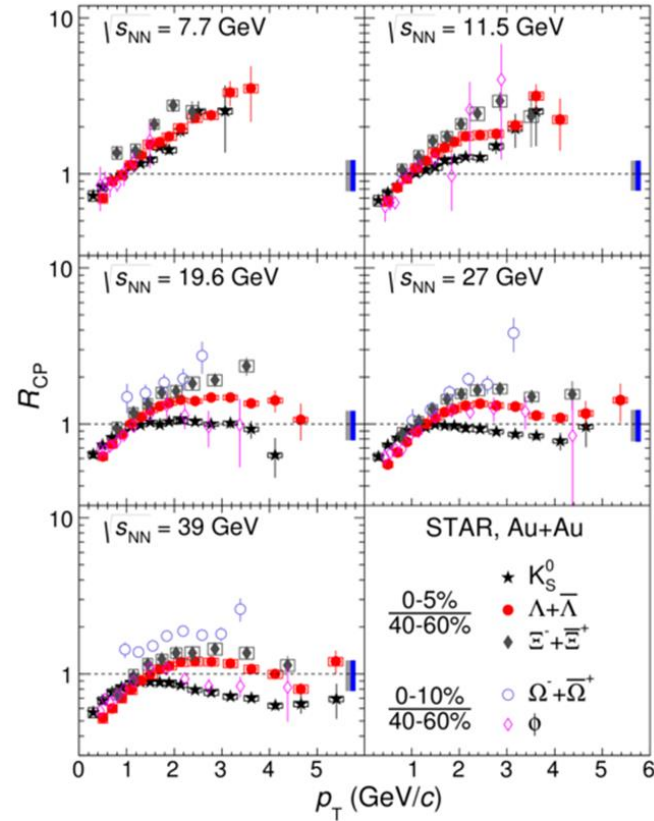
Do we understand which measurements can be affected by different containers of MPD DST?

Differential measurements using centrality definitions

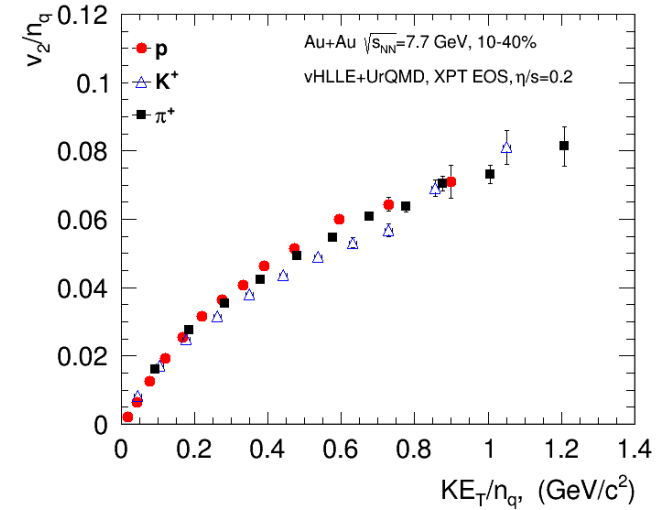
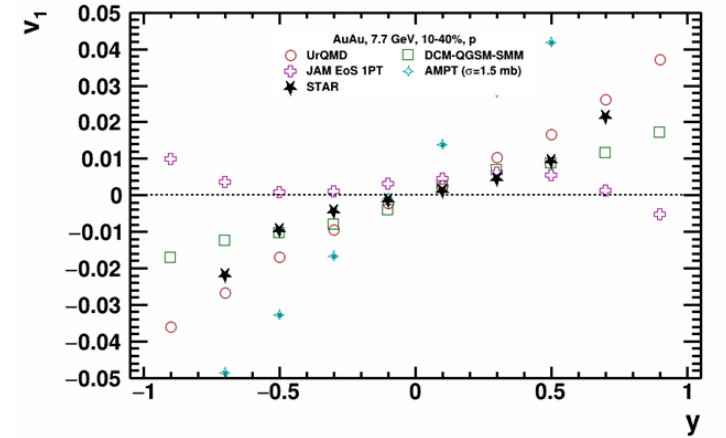
Spectra group



Flow group



$$R_{cp} = \frac{d^2 N dp_t d\eta / \langle N_{coll} \rangle (central)}{d^2 N dp_t d\eta / \langle N_{coll} \rangle (peripheral)}$$



STAR data: Phys. Rev. Lett. 112 (2014) 162301;
arxiv.org/abs/2007.14005