Deuteron (and cluster) production

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Clusters and statistical model

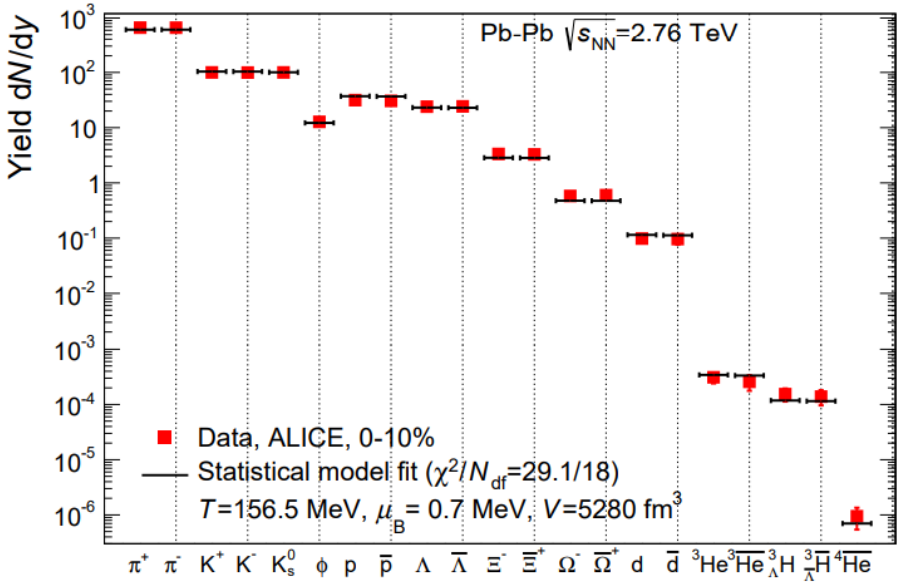
Universal description with the statistical model

Thermal model vs. Coalescence model

Binding energy of deuterons is around 2.2 MeV

Both models predict similar deuteron yields

Elliptic flow could show differences between models



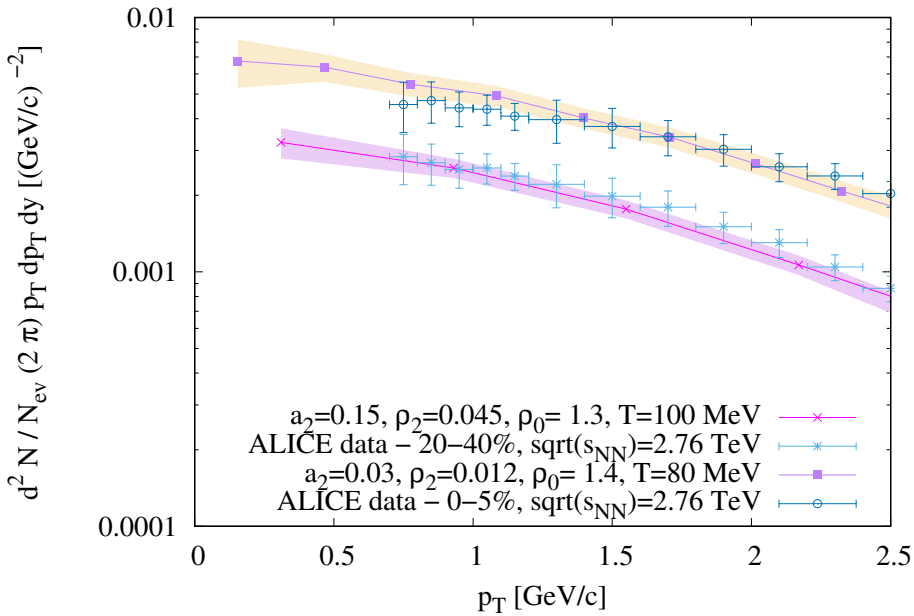
[A. Andronic *et al.*, J. Phys: Conf. Ser 779 (2017) 012012]

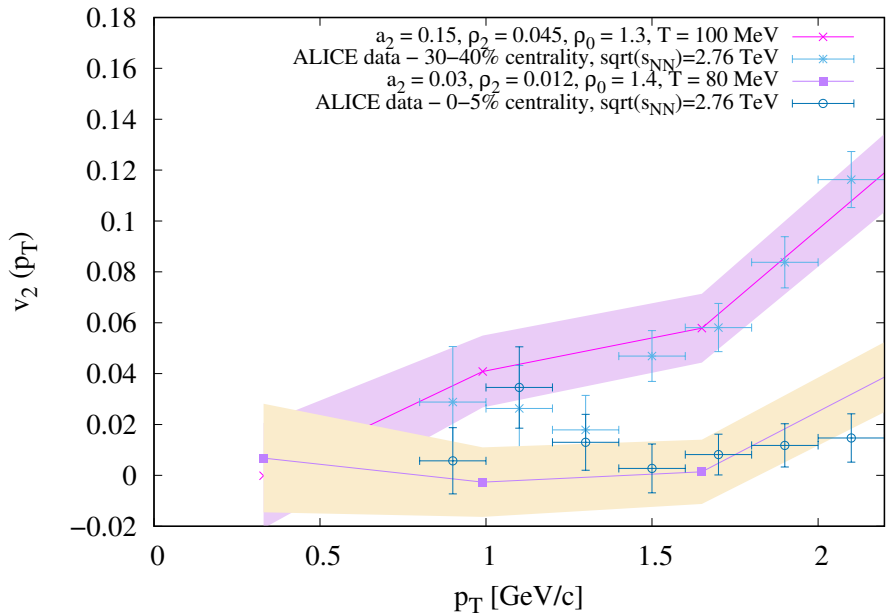
Clusters actually carry femtoscopic information about the freeze-out $\longrightarrow$ motivation for studying clusters

DRAGON with coalescence

- protons and neutrons generated by Monte Carlo generator according to the blast-wave model with resonances
- each p-n pair $\longrightarrow$ momentum and position of p and n boosted to the 2-particle rest-frame
- particle that decoupled earlier $\longrightarrow$ propagated to the decoupling time of the other particle
- deuteron candidate given by the conditions of $\Delta p \leq 0.200\ \mathrm{GeV/c}$ and $\Delta r \leq 2.1\ \mathrm{fm}$
- spin-isospin factor 3/8

DRAGON with coalescence - deuterons





- We added coalescence to Monte Carlo generator DRAGON
- Our model is able to describe the transverse momentum spectra and elliptic flow of protons and deuterons with the same parameters BUT problems with fitting pions
- For more information you can read my poster (#666) on the INDICO web page