

More systematic checks

07.02.2023

List of systematic checks



- Resonance cocktail uncertainty
- Uncertainty on the source size measurement
- Radius of the deuteron in the Gaussian wave function
- $\Delta\phi$ - $\Delta\eta$ correlations

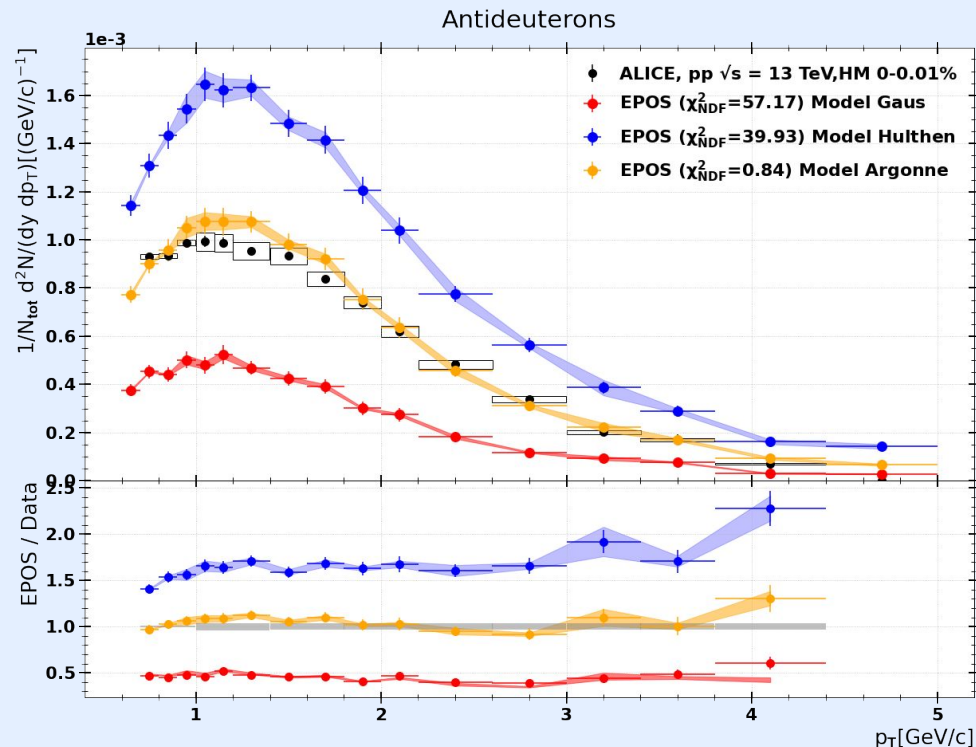
Primordial Fraction

Deuteron Spectra

- Update from last week:

A factor of 1.1 was mistakenly in the drawing script. After removal Argonne matches data much better.

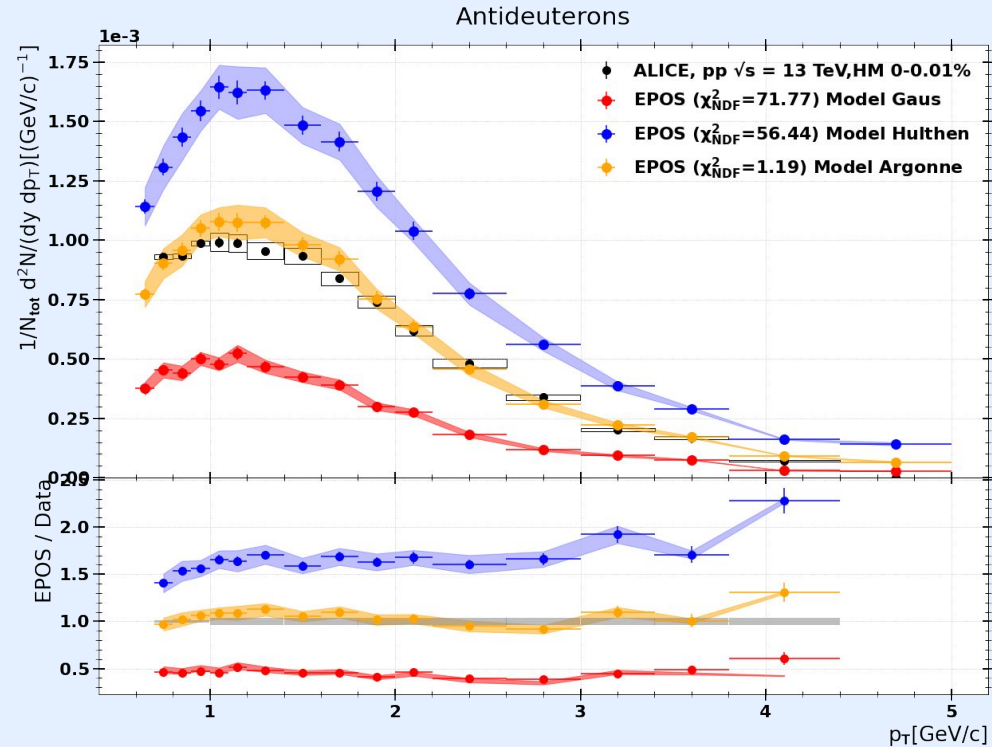
- Short message from last week:
Systematic uncertainty due to variation of
primordials smaller than statistical
fluctuations.



Source size

Deuteron Spectra

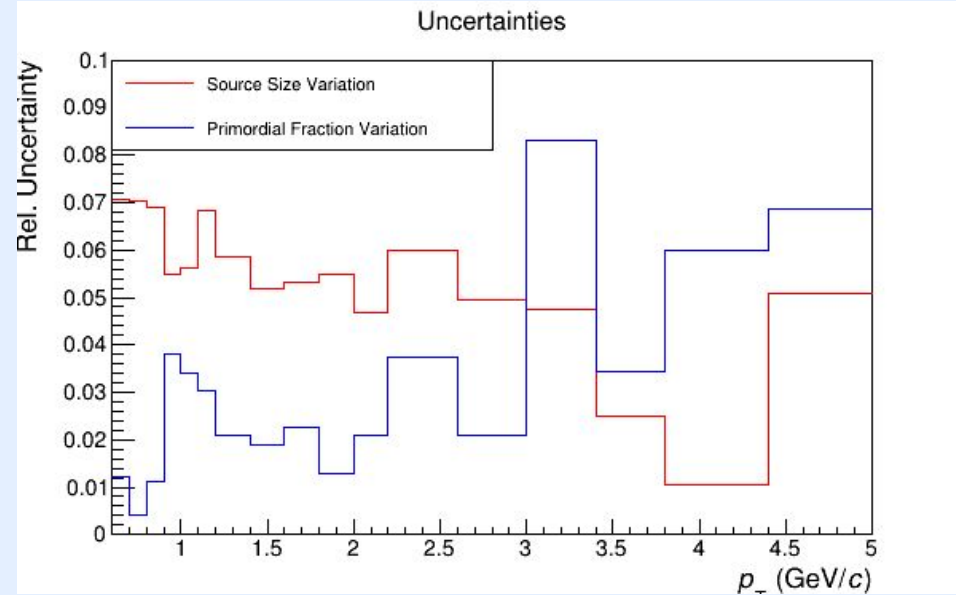
- Variation of the source size by $\pm 7\%$
(from global systematic uncertainty of the ALICE measurement)
- Systematic uncertainty of 5-7%
-> larger than statistical fluctuations



Source size

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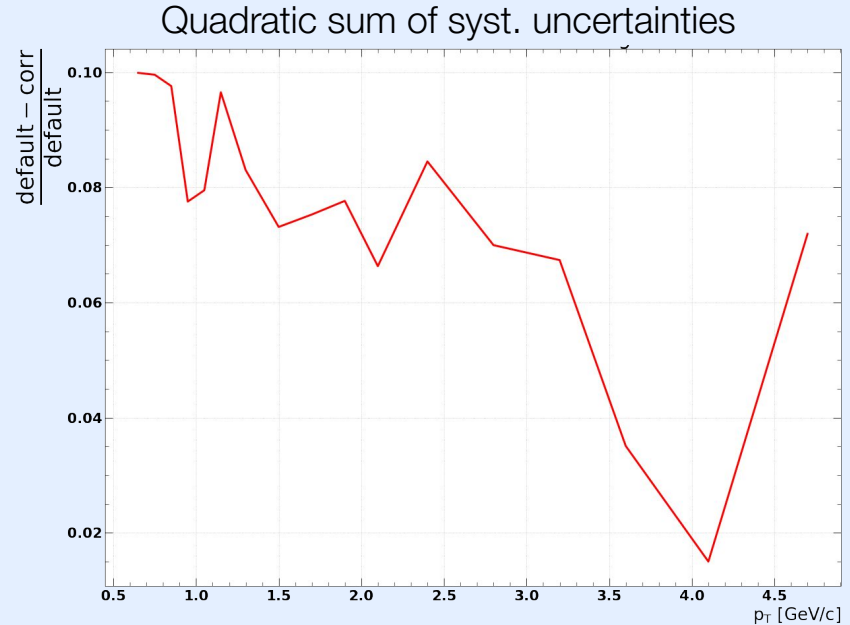
- Variation of the source size by $\pm 7\%$ (from global systematic uncertainty of the ALICE measurement)
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- Overall, systematic uncertainty due to source size dominates.
- $p_T < 3 \text{ GeV}/c$: dominated by statistical fluctuation



Source size

Deuteron Spectra

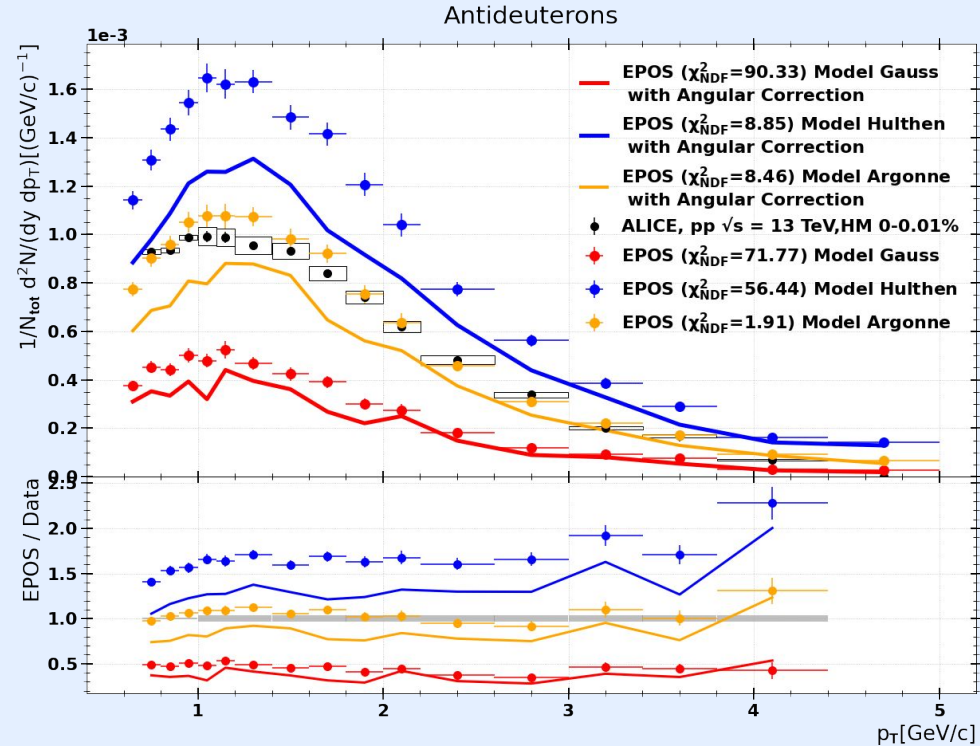
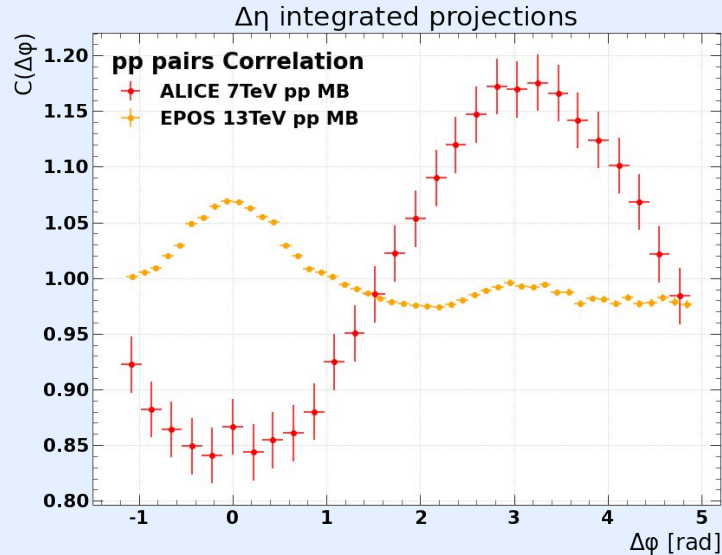
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Angular correlations

Deuteron Spectra

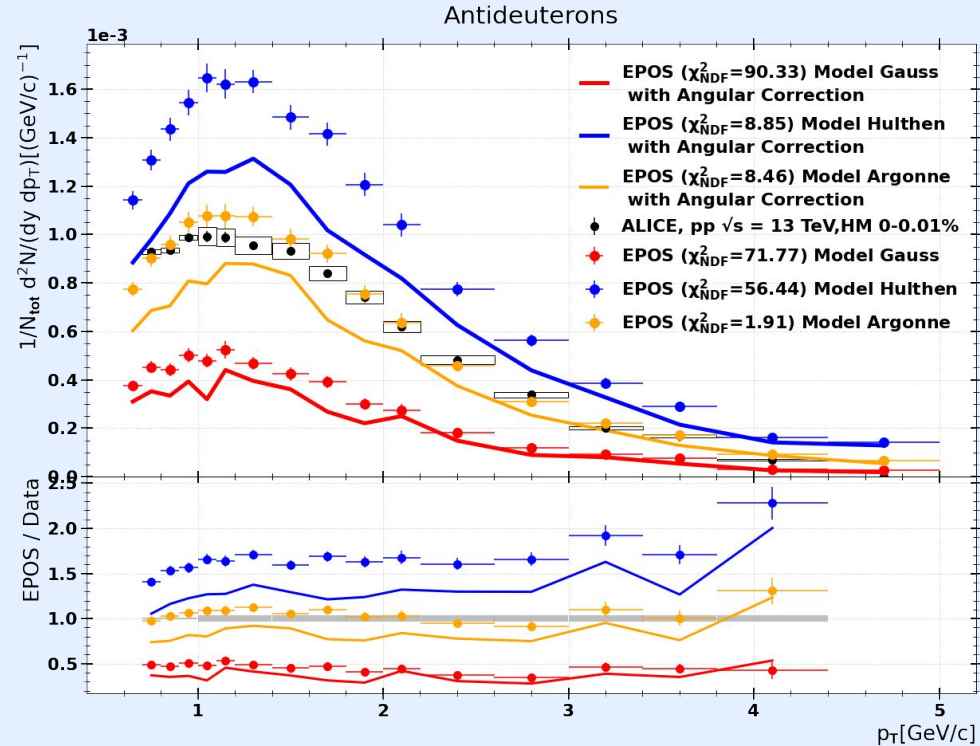
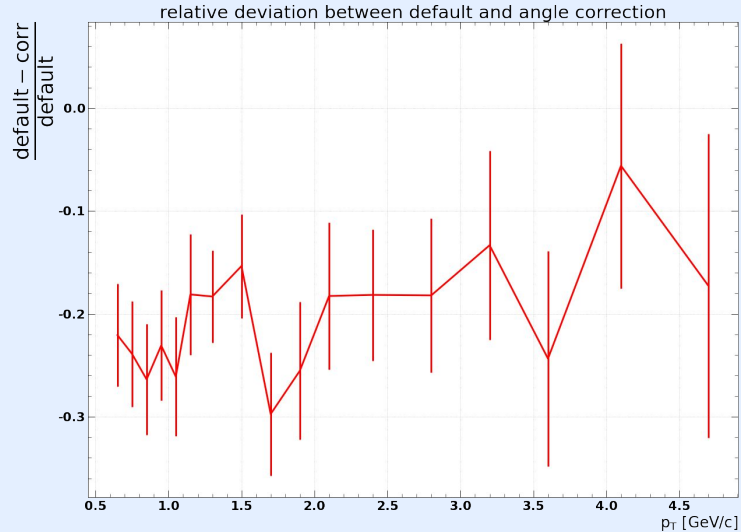
- Crude reweighting scheme to estimate effect of correct $\Delta\phi$ distribution
- Effect $\sim 20\%$ (probably overestimating)
- Unidirectional effect



Angular correlations

Deuteron Spectra

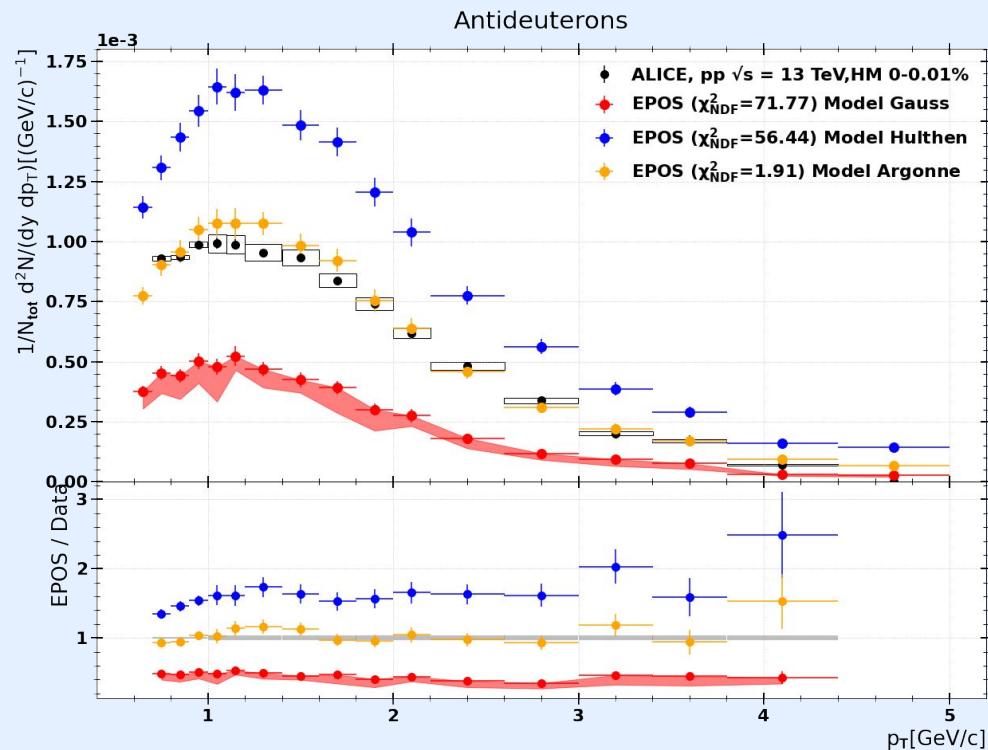
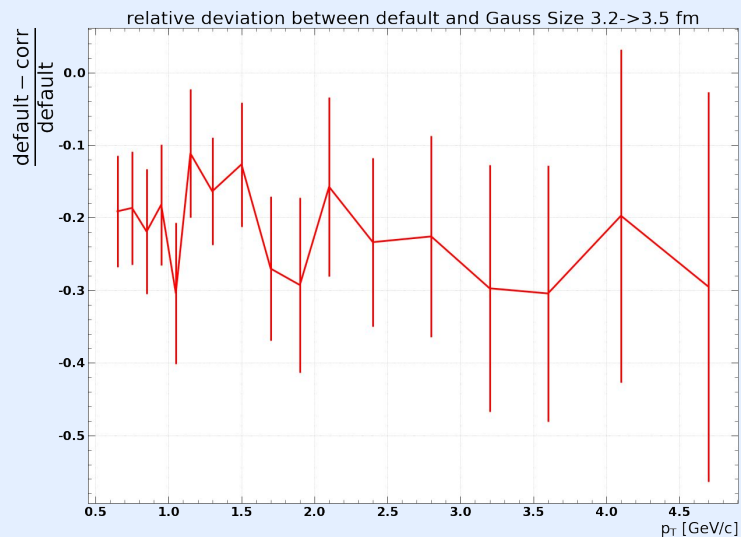
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Gaus Size

Deuteron Spectra

- Changing the size parameter in the Gaussian wave function from 3.2 \rightarrow 3.5 fm
- Effect flat 20%
- Unidirectional effect

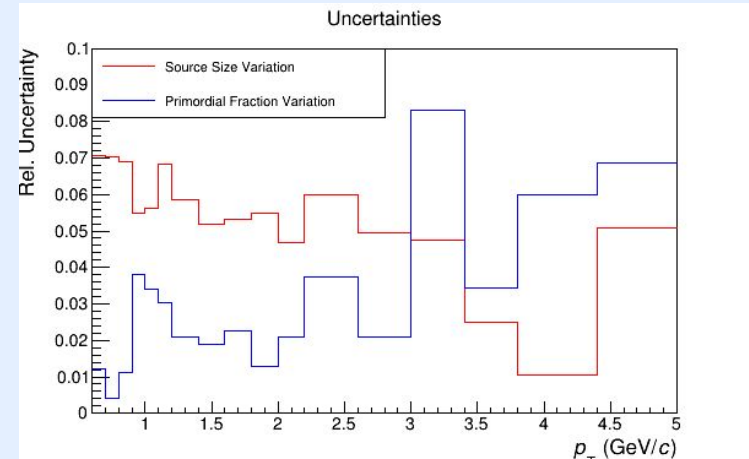


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- All systematic uncertainties are assessed
 - Last step: Full statistics run with S+D wave

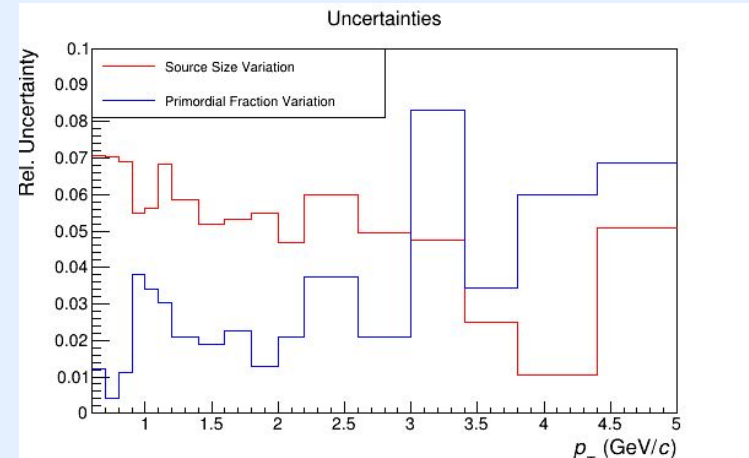


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To Do's:

- $\Delta\phi$ - $\Delta\eta$ plot (ch. 3?) + discussion (ch. 4)
- Systematic uncertainties plot + discussion (ch. 4). Extra plot or add to figure 4?
- Discussion Blum vs. our B2
- Appendix S+D wave explanation
- Write abstract



Backup

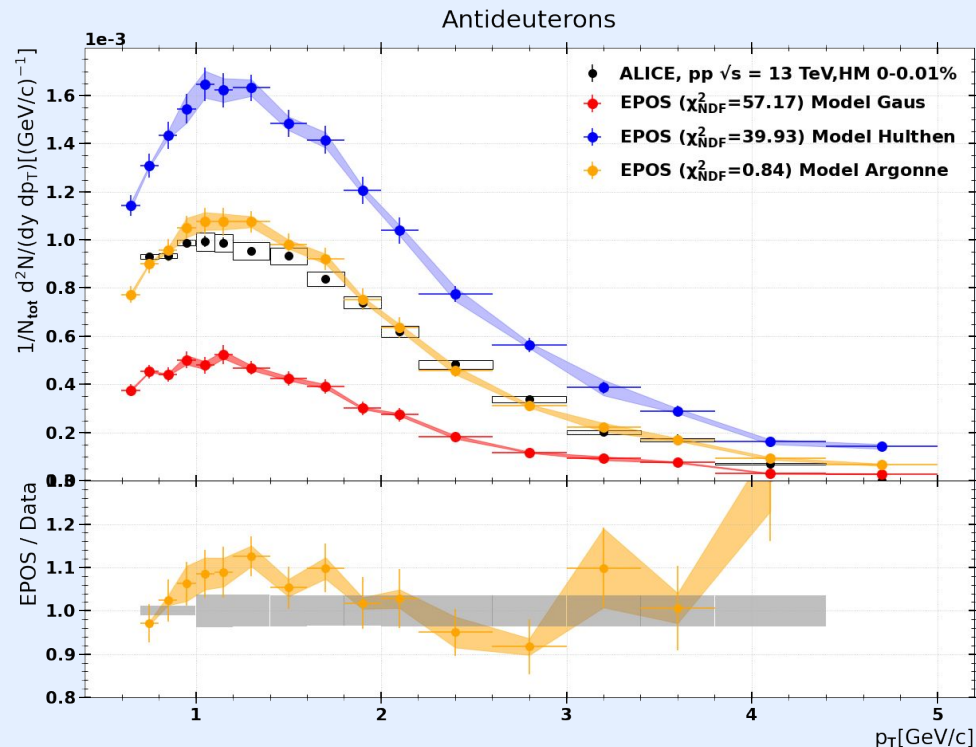
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