

BeAGLE/(old)PyQM update

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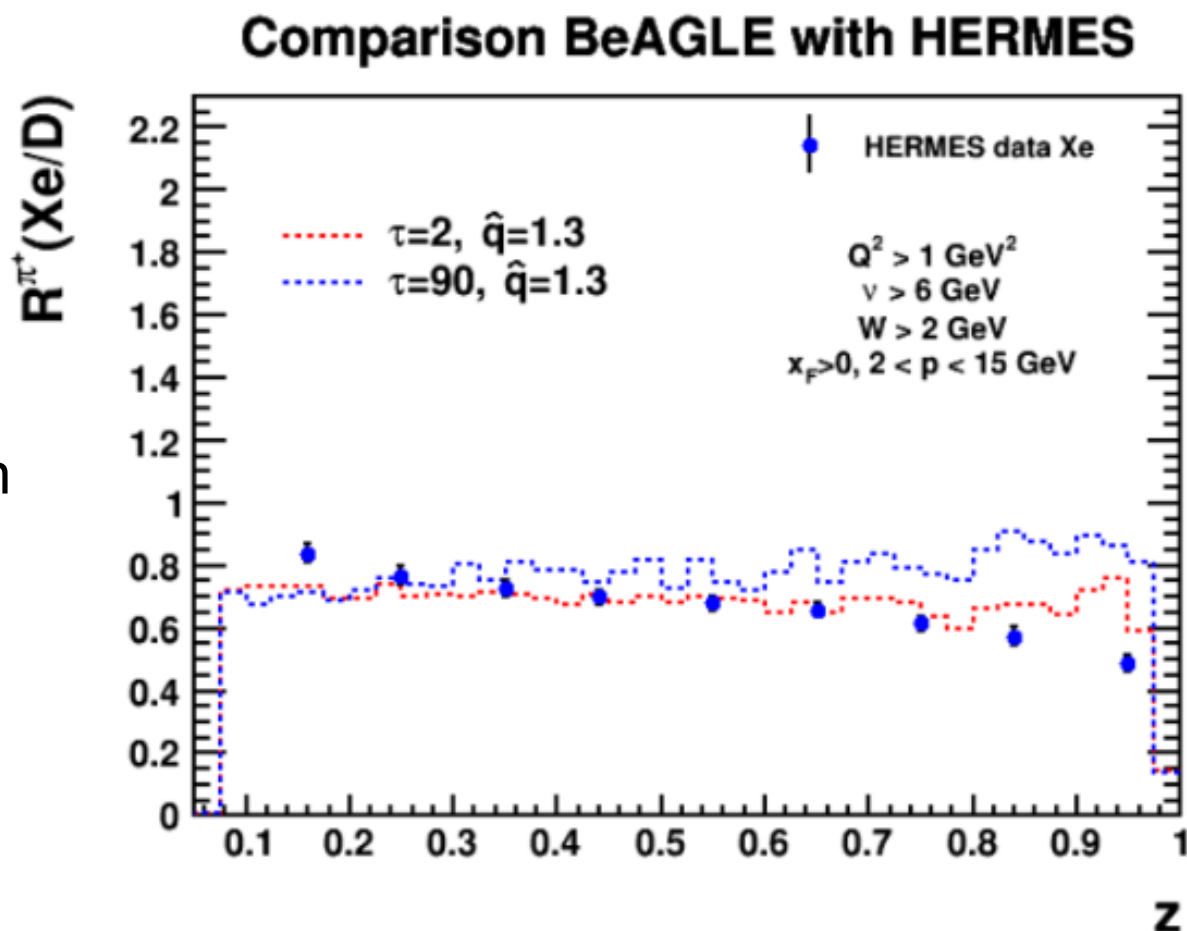
First the good news

^{131}Xe with $Z=54$

- By adding a **LOT** of FSI, we can $\sim$ match the data.
 - Recall: typical values are $\hat{q}$ ~ 0.36 (GeV/fm 2)
 $\tau_0 = 5-9$ fm/c
- Even so, the MC is flatter than the data.

Z = atomic number

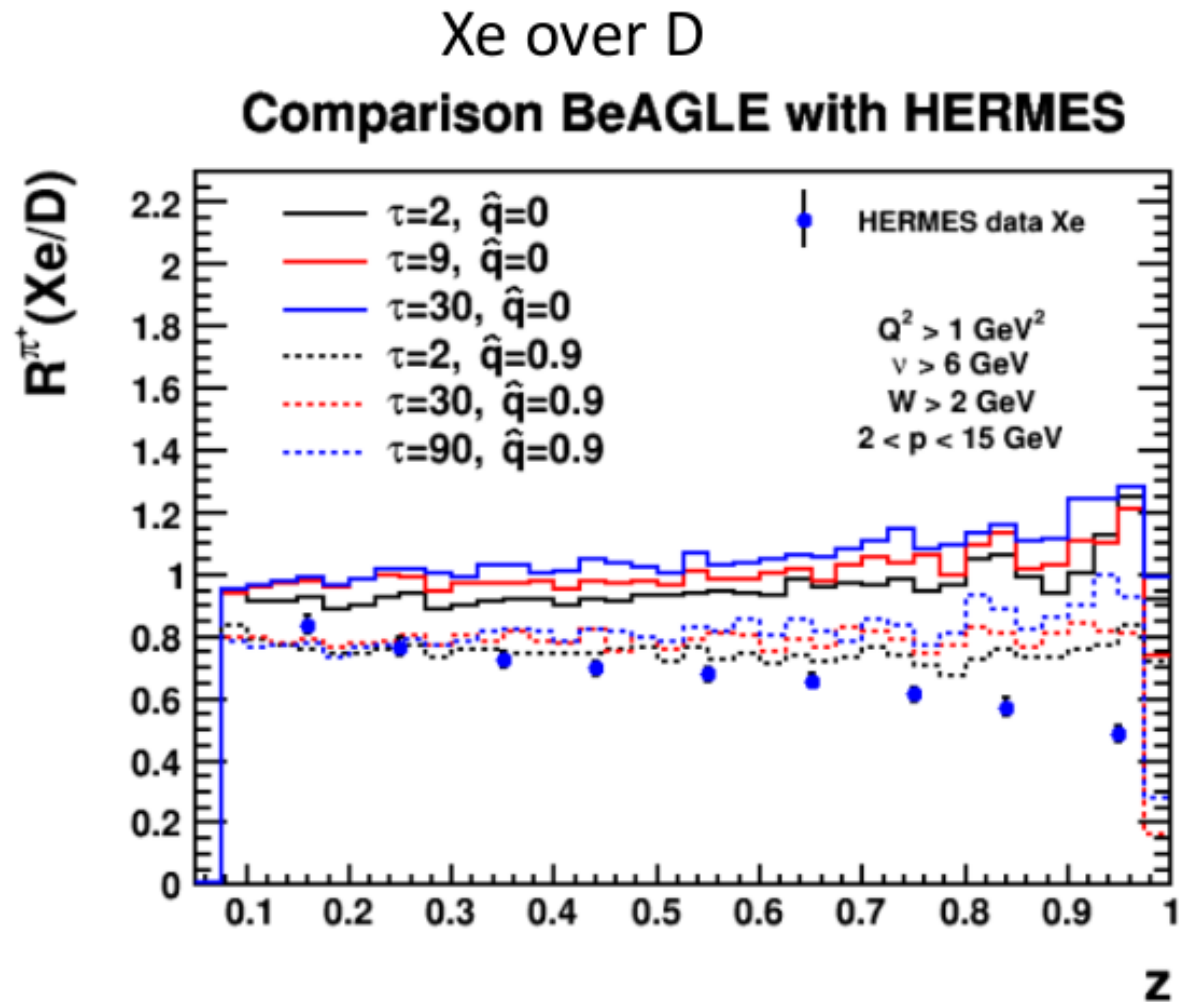
$z = E_h/\nu$ (in target rest frame)



The puzzle

With less FSI (low $\hat{q}$, hi τ_0):
The ratio wants to rise with z
and generally is above 1!

Ratio is $(N_{\pi^+}/N_{ev})_{Xe} / (N_{\pi^+}/N_{ev})_D$

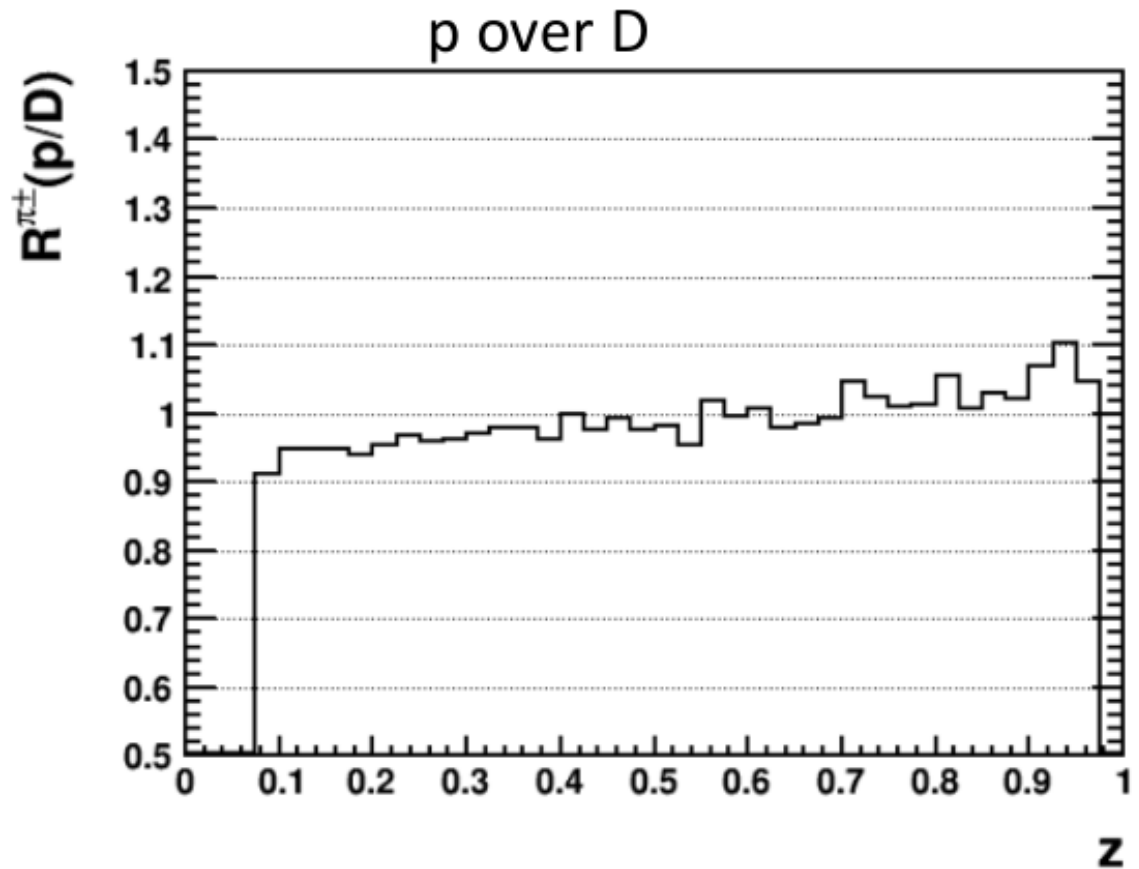


First thought - isospin

- Data from HERMES shows that leading $\pi^+ \gg \pi^-$ and $R_{\pi^+}(p/D)$ increases at high z .
- This is all natural if you think about the properties of u vs. d quarks, and remember that we are mostly in the valence region.
 - LO-DIS hits $u(\bar{u})$ 4x more often than a $d(\bar{d})$, and a leading π^+ requires a leading u or a $\bar{d}$.

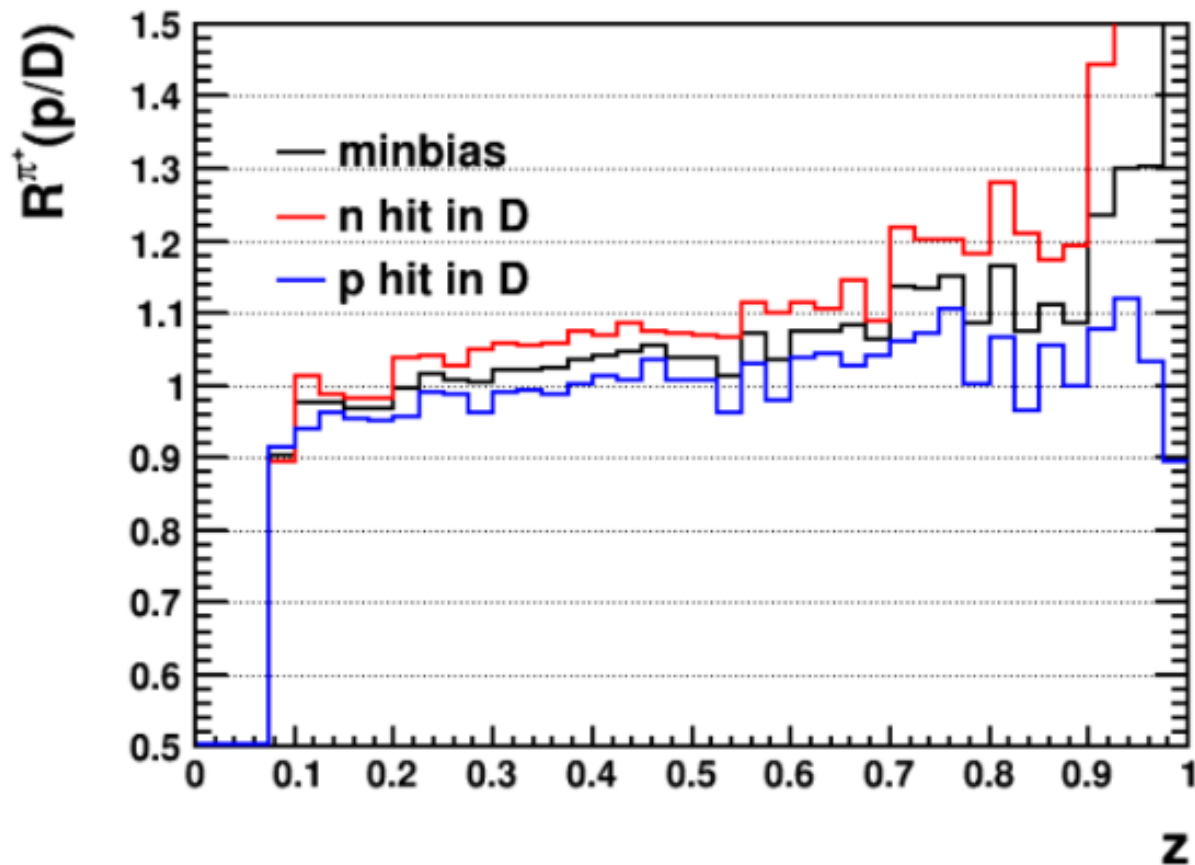
More pions at high z for p vs. D

- Note: this is a bit diluted because it mixes the minority π^- in as well as the π^+
- But it makes the point that Pythia is reasonable.



The p/D IS mostly isospin

KTAUGE=0 NO INC. & Qhat=0 should be no FSI

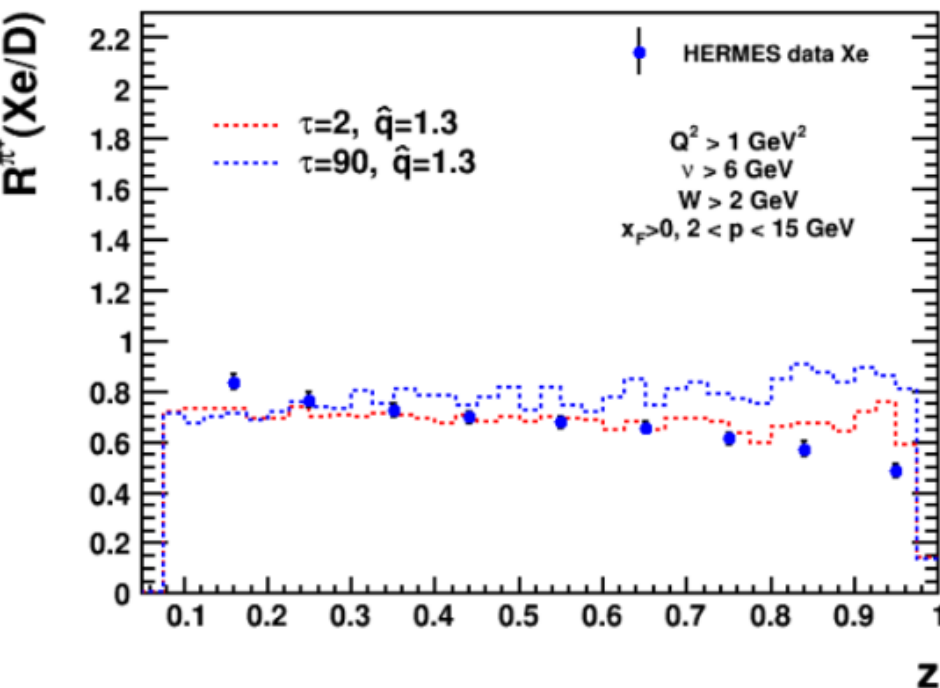


Xe/D isospin effect is not huge and goes the wrong way.

^{131}Xe with $Z=54$

(iso-)Xe ^{131}Xe with $Z=66$ = ^{131}Dy

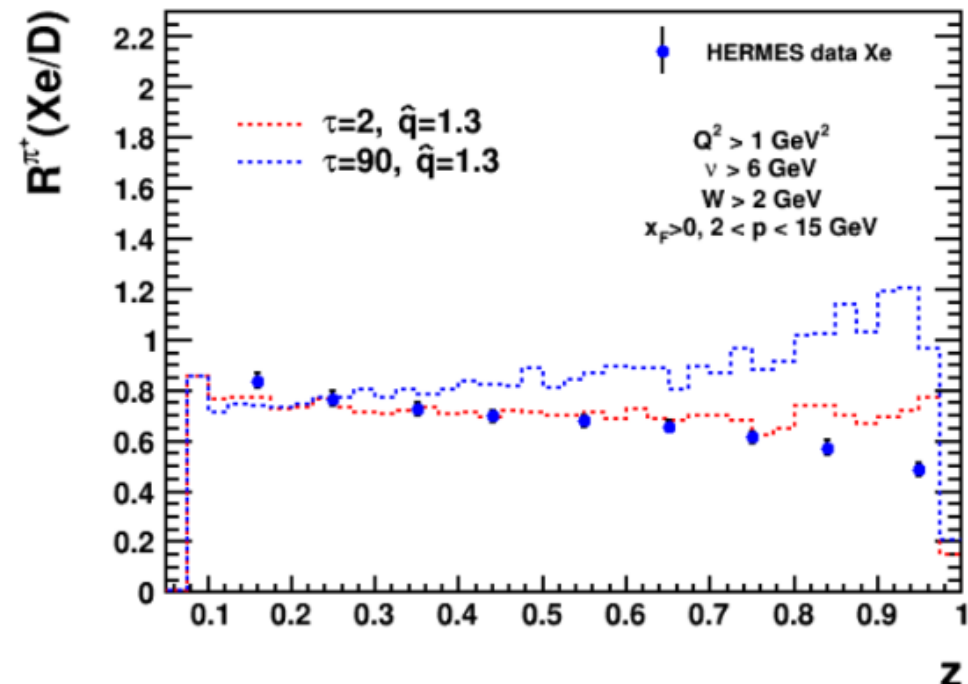
Comparison BeAGLE with HERMES



$Z/A = 0.412$

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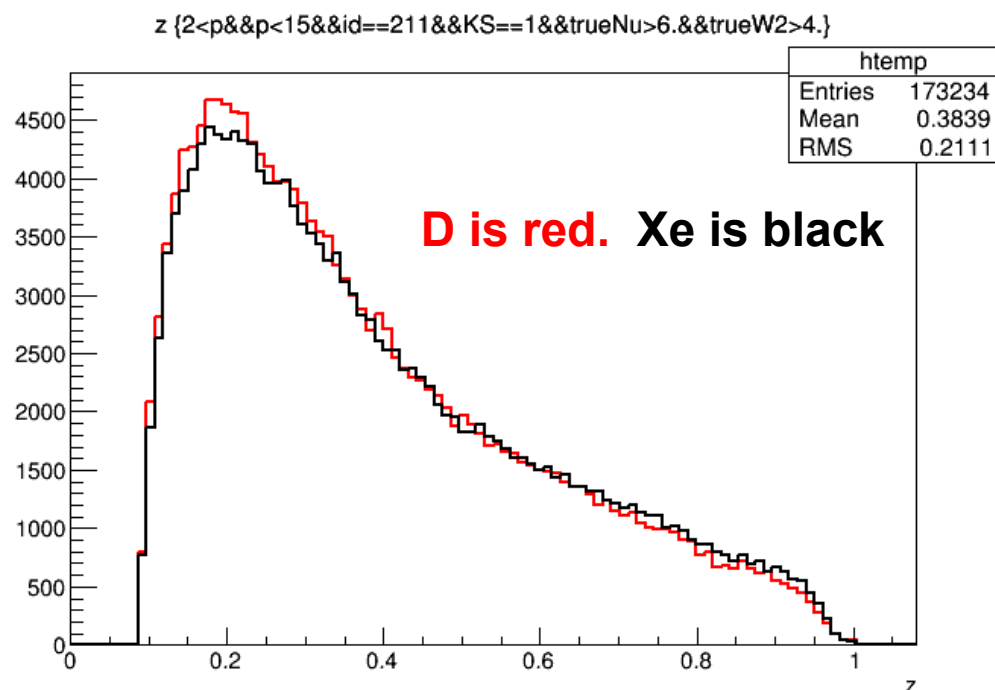
Comparison BeAGLE with HERMES



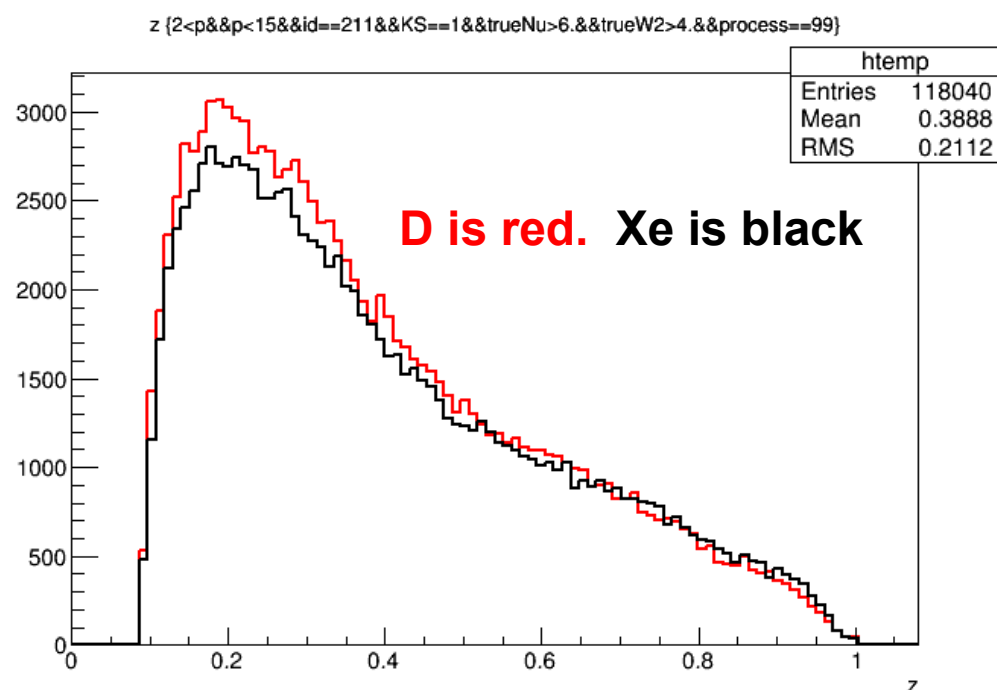
Raphaël's Xe plots are really isoXe/D
 vs. $Z/A = 0.504$

LZ+MDB

How about DIS only?



All processes

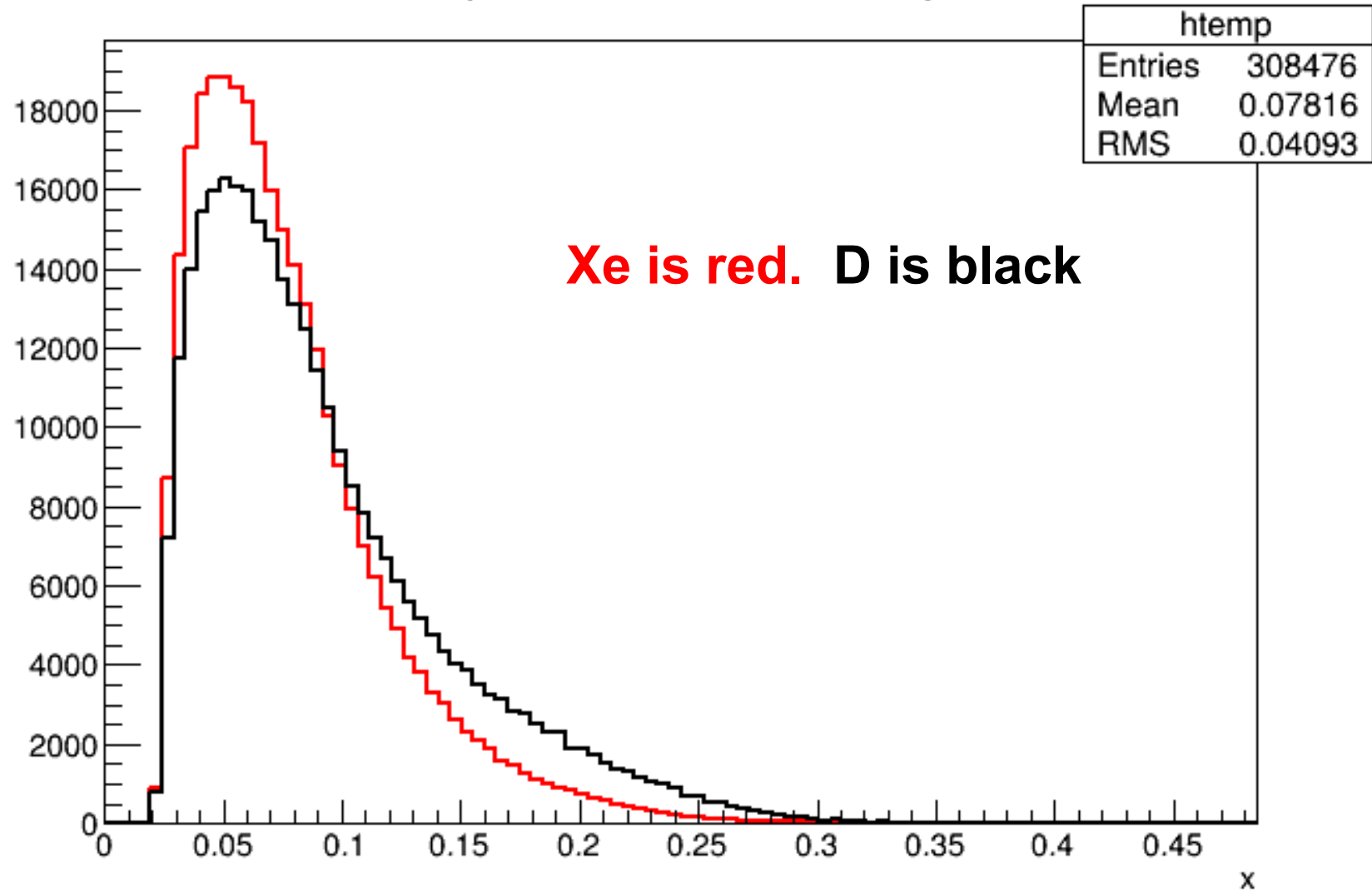


LODIS only

The effect (Xe/D rises with z) is slightly bigger in the LODIS case.

Nuclear pdf effect?

x {trueNu>6&&trueW2>4}



Conclusion

- $R(z)$ is not that straightforward.
- Turning off q_{hat} and INC does not lead to flat $R(z)$ for Xe/D.
- Advice welcome.
- Stay tuned...