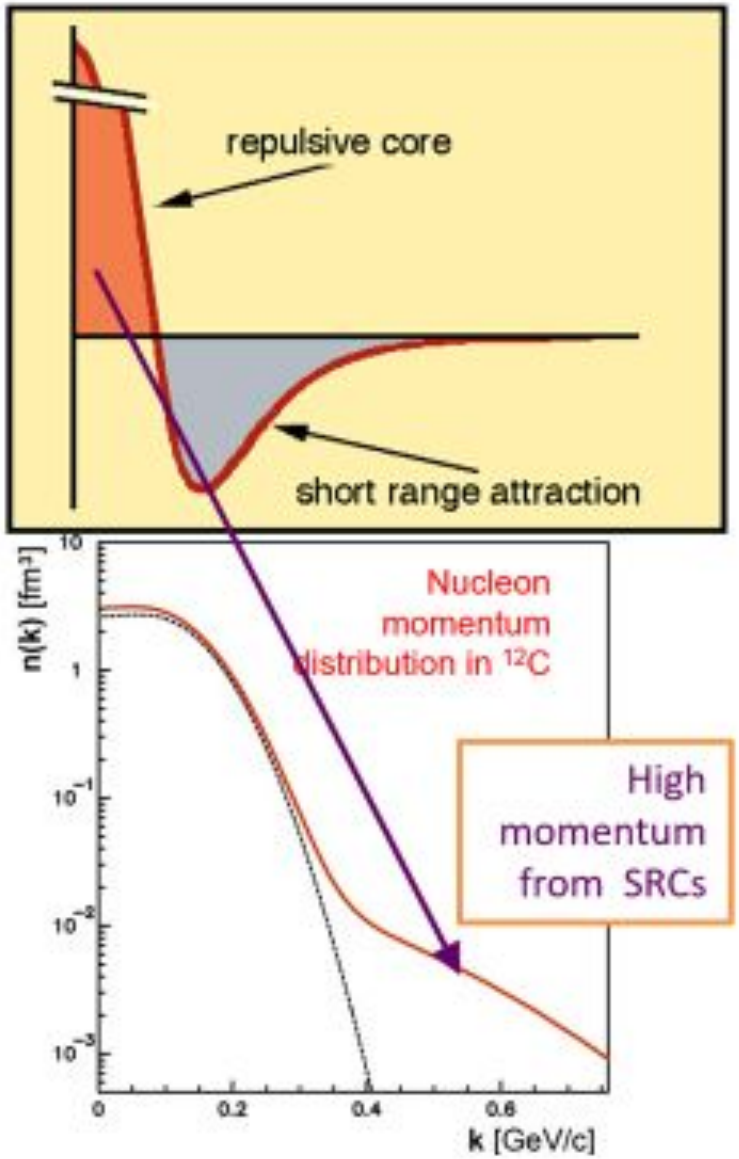
LOOK AT EARLY DATA IN XEM2 EXPERIMENT

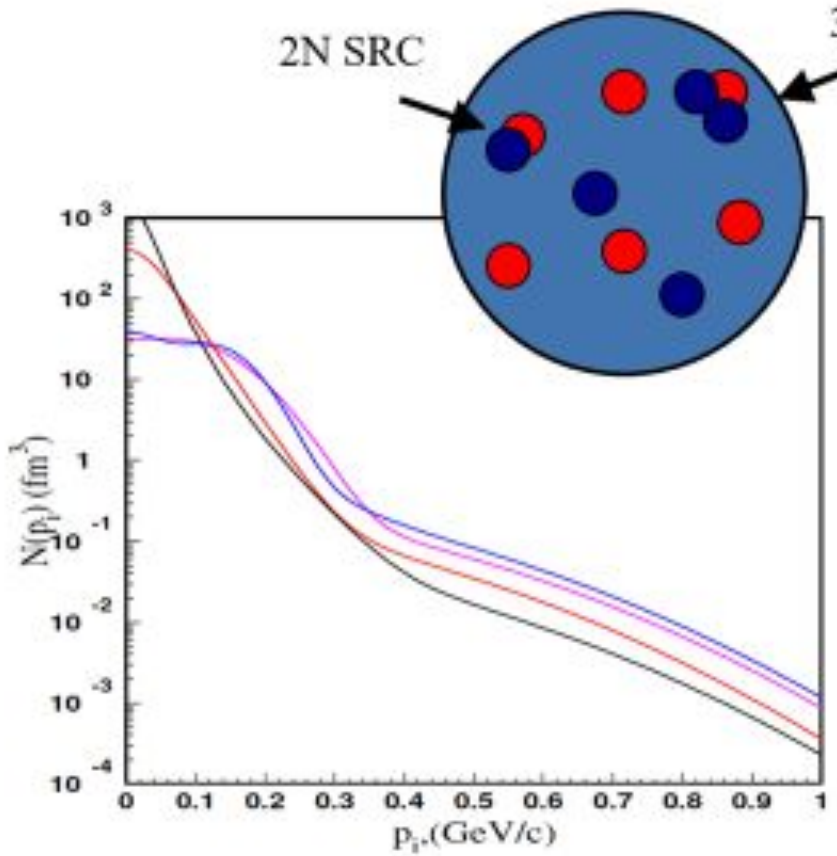
By Ramon Ogaz

Jefferson Lab

High momentum nucleons



→ **Short Range Correlations**



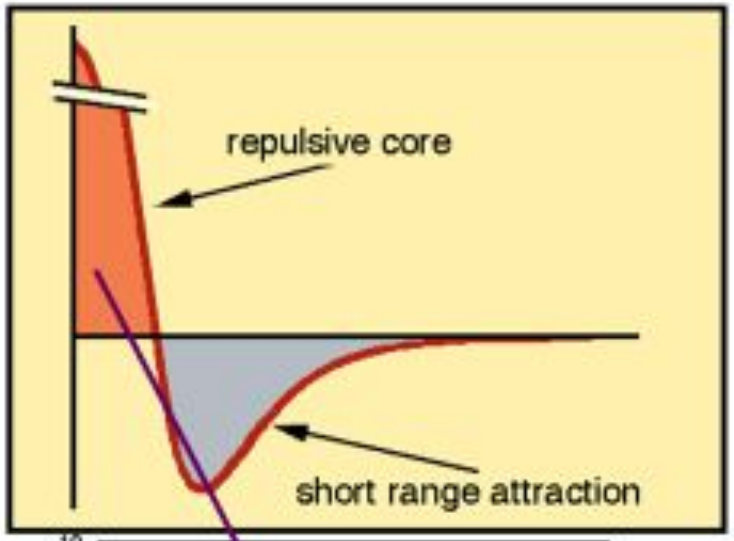
$$\sigma(x,Q^2) = \sum_{j=1}^{A} \frac{1}{j} A\, a_j(A)\sigma_j(x,Q^2)$$

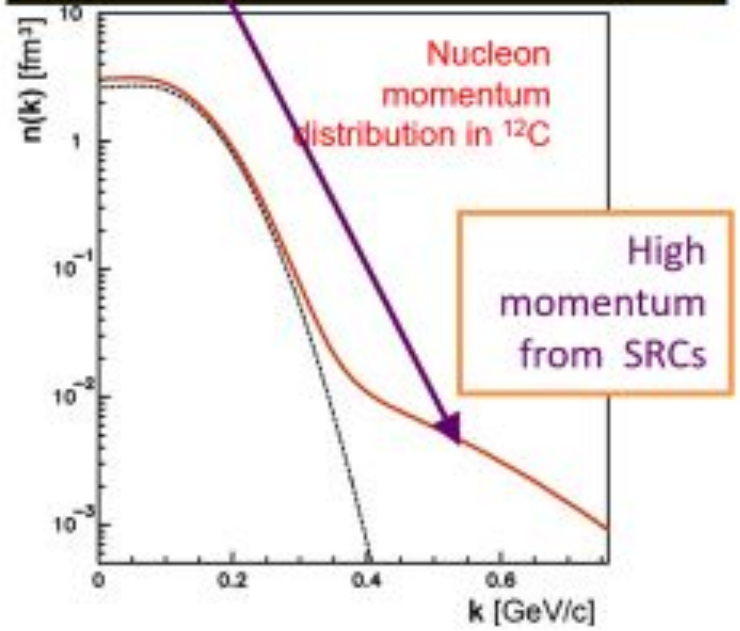
$$= \frac{A}{2} a_2(A)\sigma_2(x,Q^2) +$$

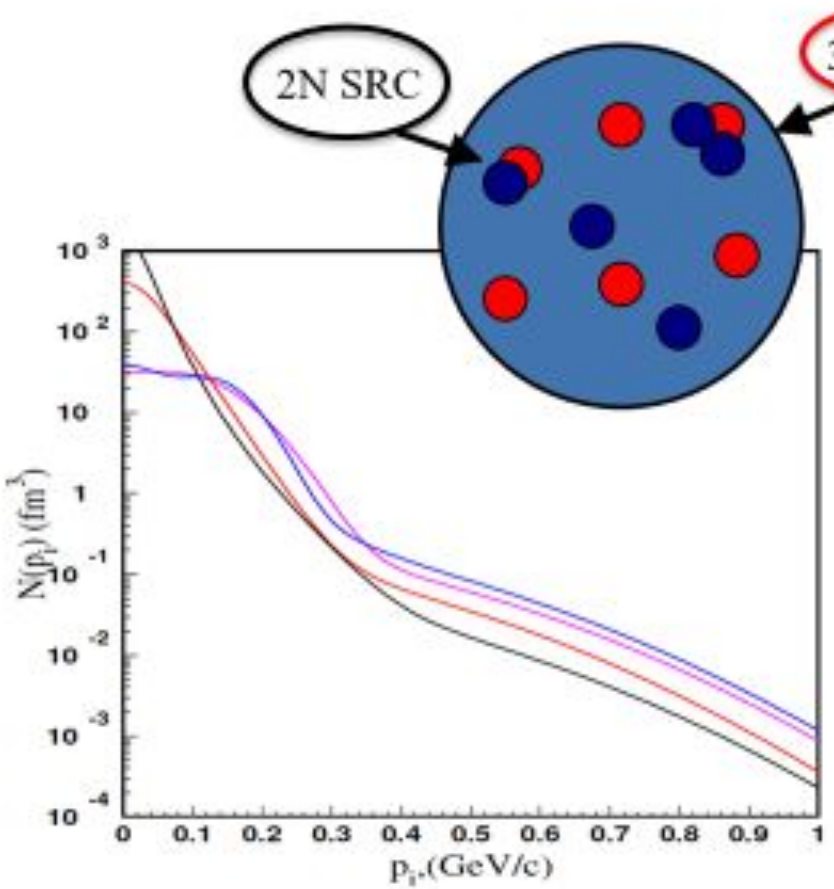
$$\frac{A}{3} a_3(A)\sigma_3(x,Q^2) + \ldots.$$

High momentum nucleons

→ Short Range Correlations







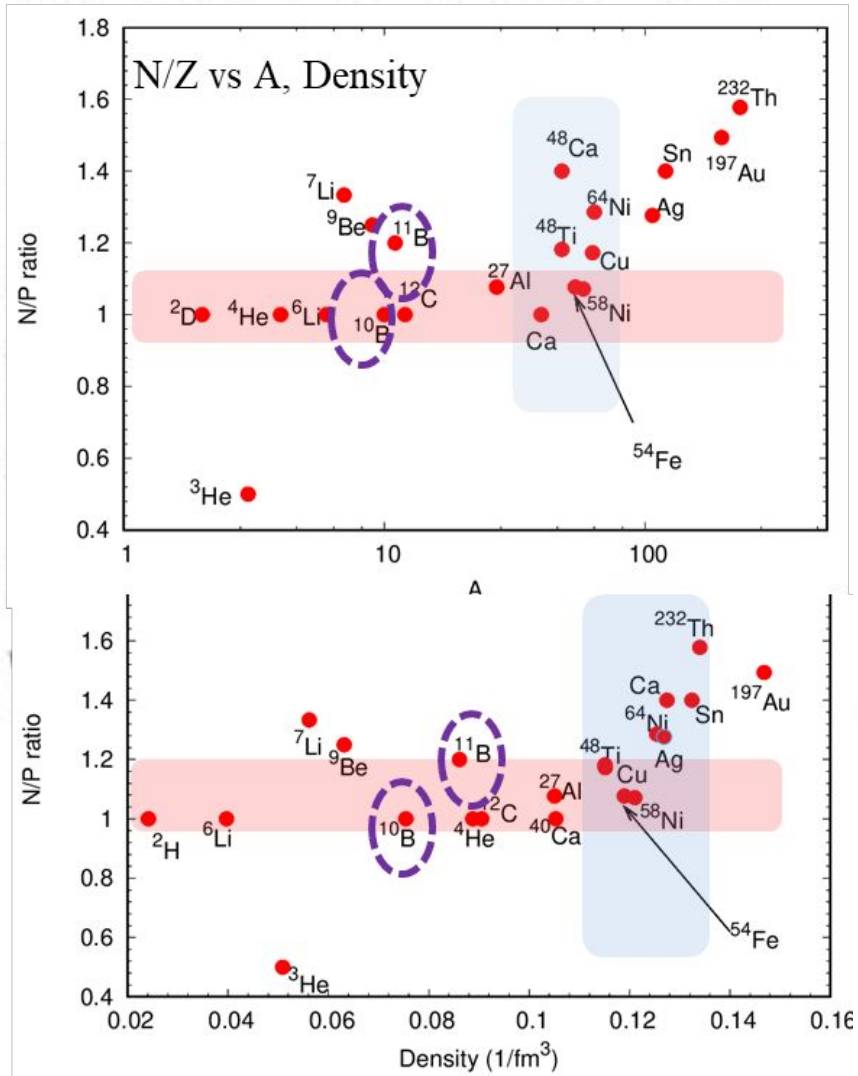
$$\sigma(x,Q^2) = \sum_{j=1}^{A} \frac{1}{j} A\, a_j(A)\sigma_j(x,Q^2)$$

$$= \frac{A}{2} a_2(A)\sigma_2(x,Q^2) +$$

$$\frac{A}{3} a_3(A)\sigma_3(x,Q^2) + \ldots$$

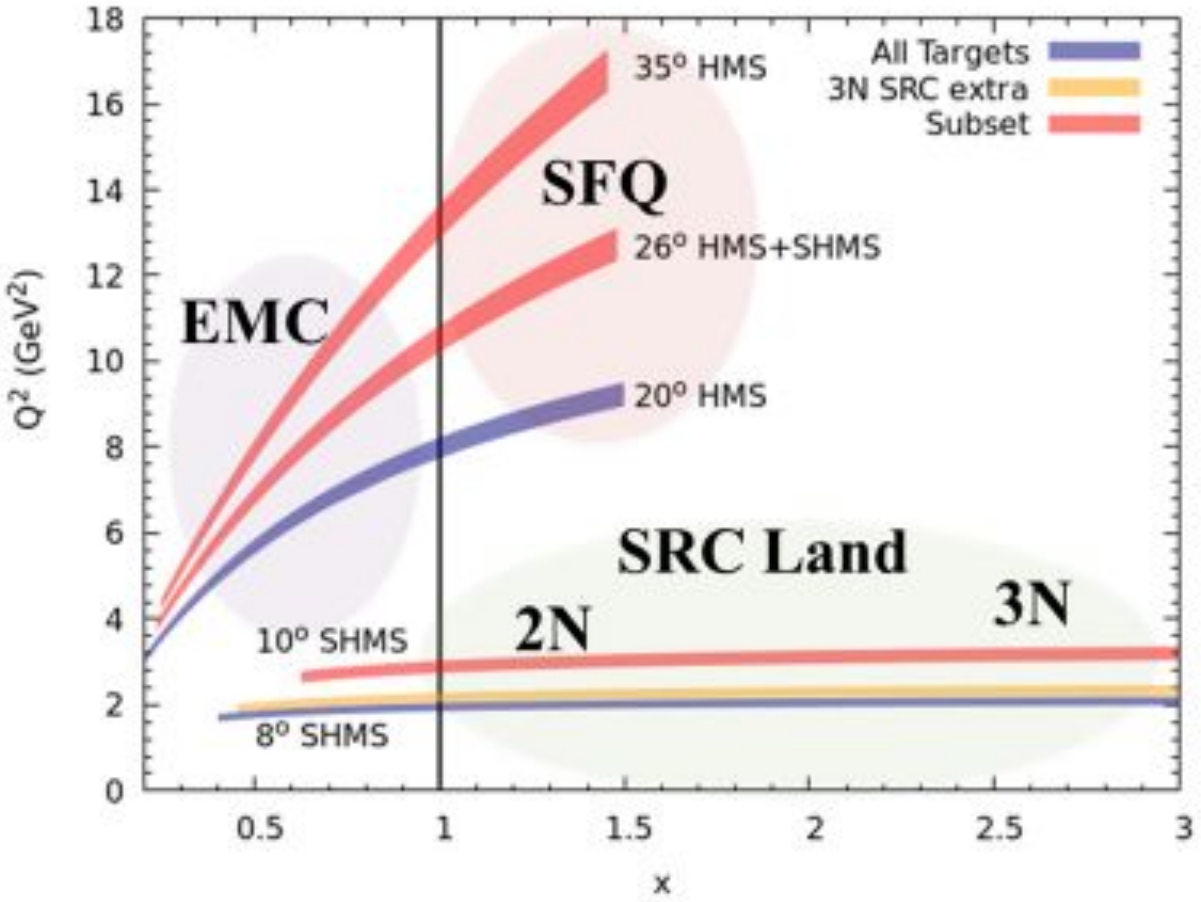
$$\frac{2}{A}\frac{\sigma_A}{\sigma_D} = a_2(A)$$

XEM2 TARGETS



Ladder 1	Ladder 2
Hydrogen/He3	Hydrogen /He3
Deuterium/He4	Deuterium/He4
Dummy	Dummy
Optics	Optics
Carbon hole	Carbon hole
12C	12C
40Ca	6Li*
48Ca	7Li*
10B	10B
11B	11B
9Be	9Be
54Fe	Al
58Ni	Cu
64Ni	Au
Ag	1 mm
Sn	1 mm
232Thorium	1 mm
Titanium	Thicker carbon?

XEM2 KINEMATICS

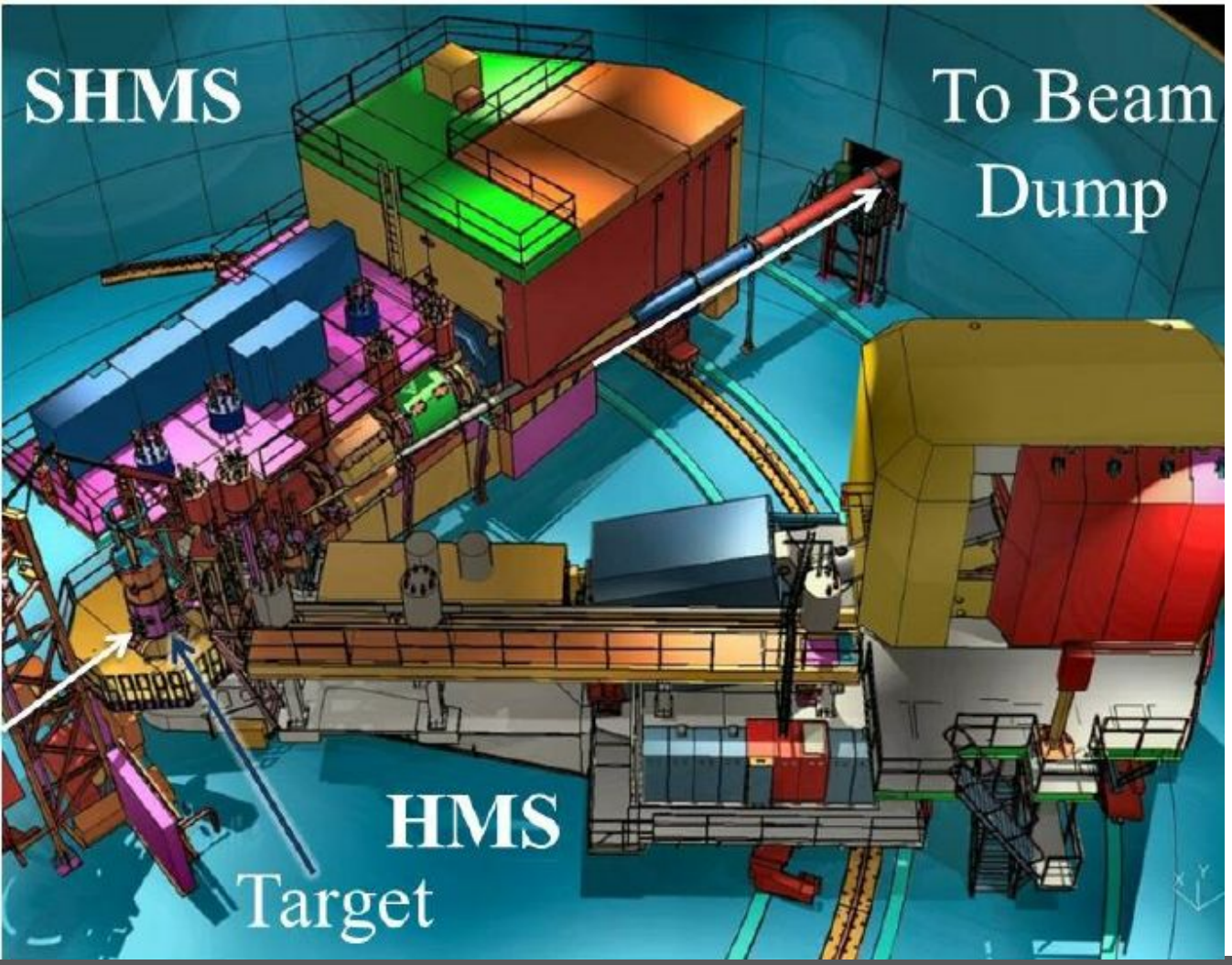


SHMS allows us to explore smaller scattering angles, and therefore larger $x_{bjorken}$ at a given Q^2.

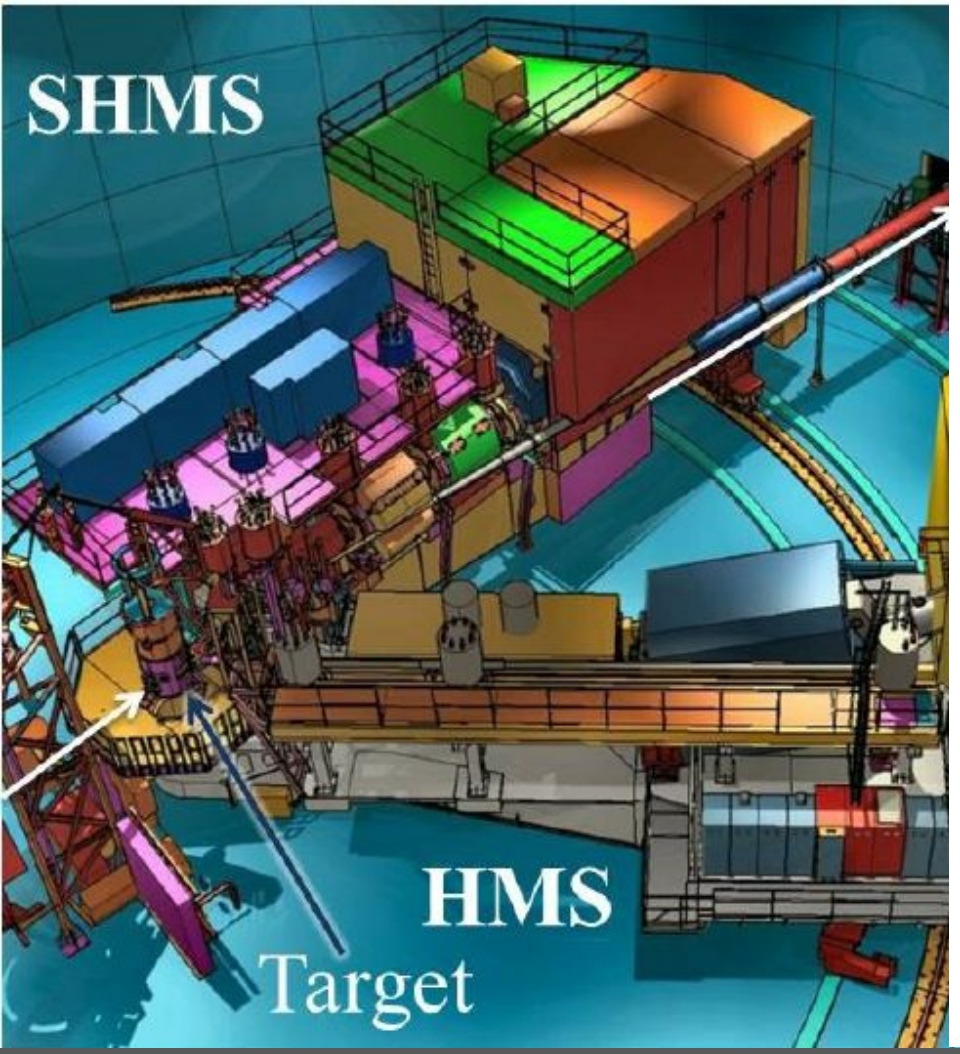
A lot of focus for 2N and 3N measurements thanks to SHMS high $x_{bjorken}$ capability.

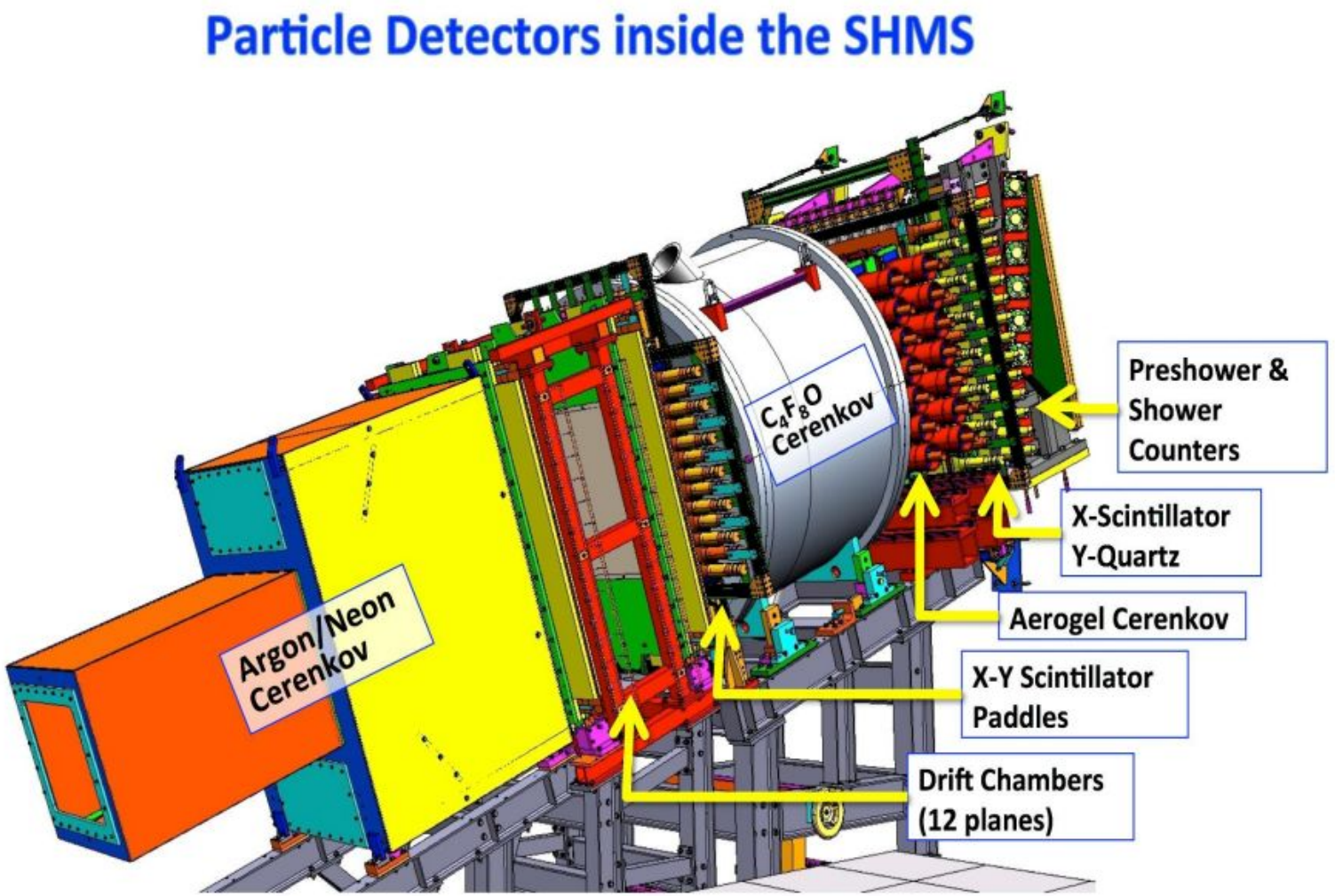
Able to complement 26 deg measurement for Super-Fast Quarks

EL LABORATORIO EN HALLC

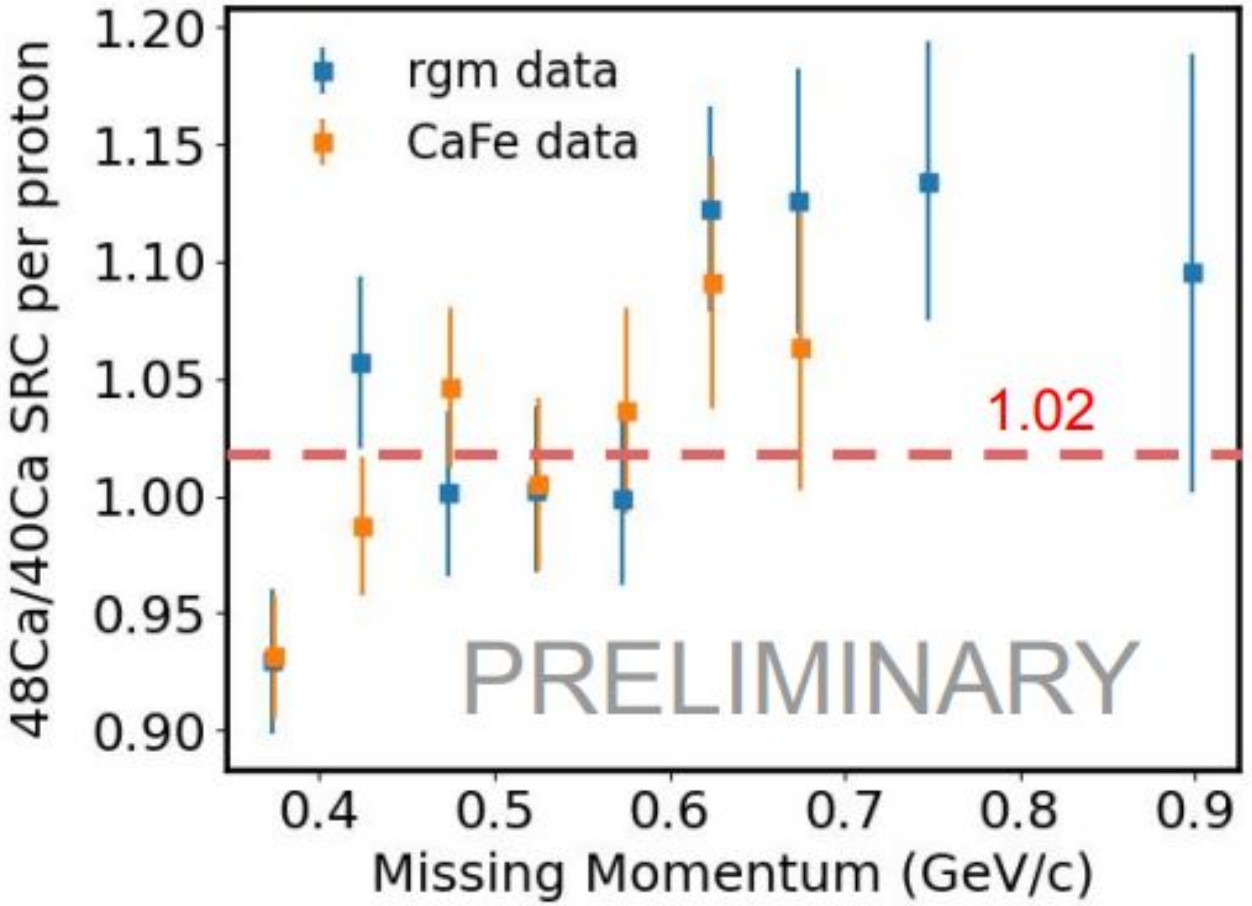


EL LABORATORIO EN HALLC

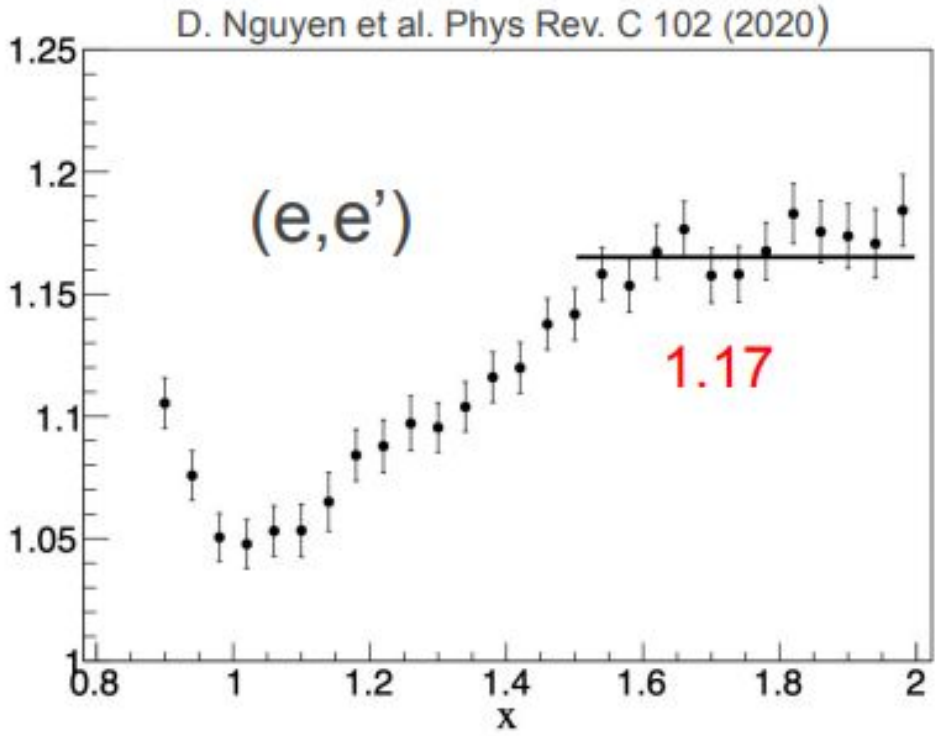




(e,e') and (e,e'p) disagreement?



$$\frac{\sigma(^{48}\mathrm{Ca})}{\sigma(^{40}\mathrm{Ca})}$$



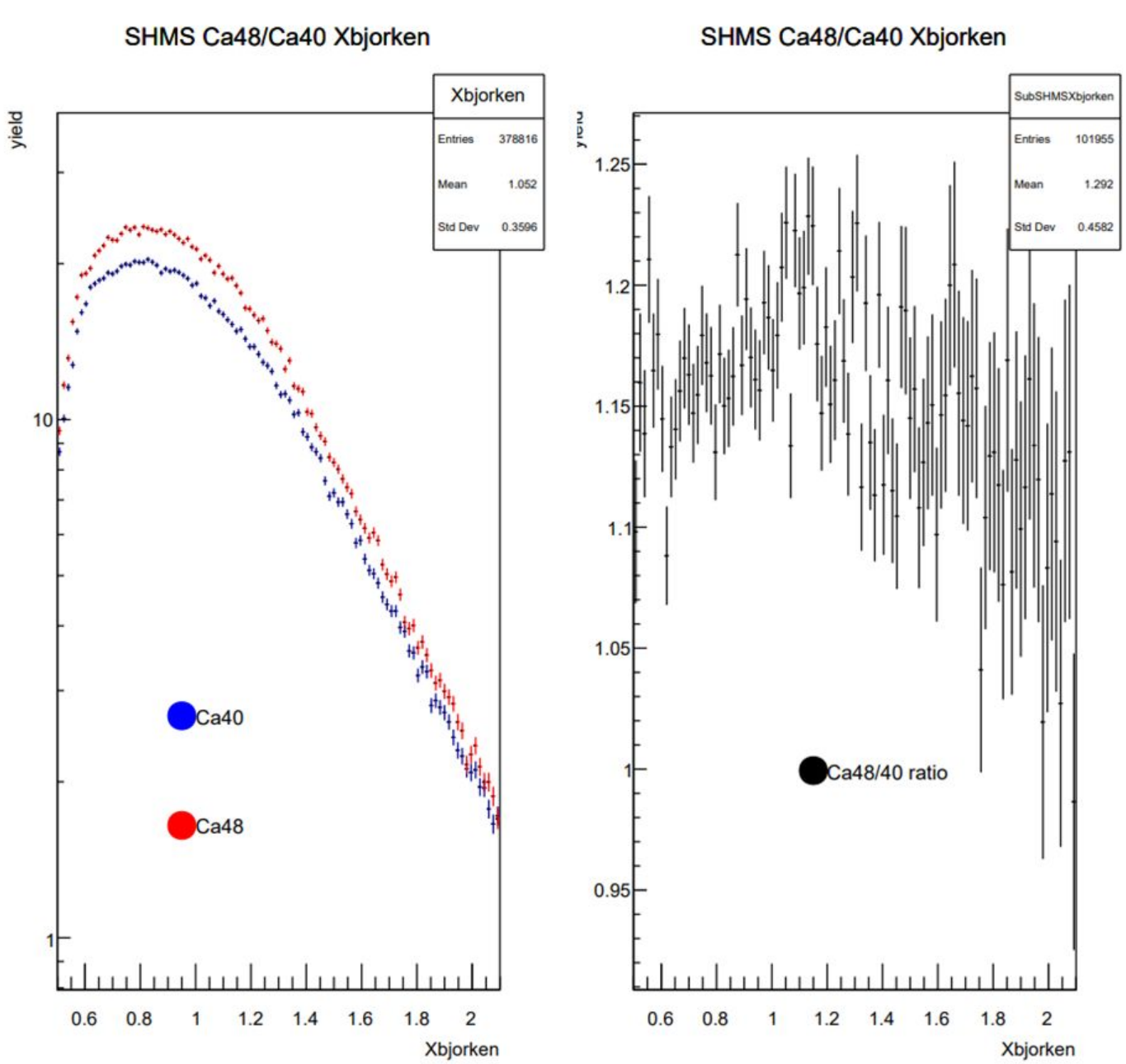
Contradiction????

CA48/40 FROM XEM2

Thickness normalized yields

This is only a fraction of the statistics being shown

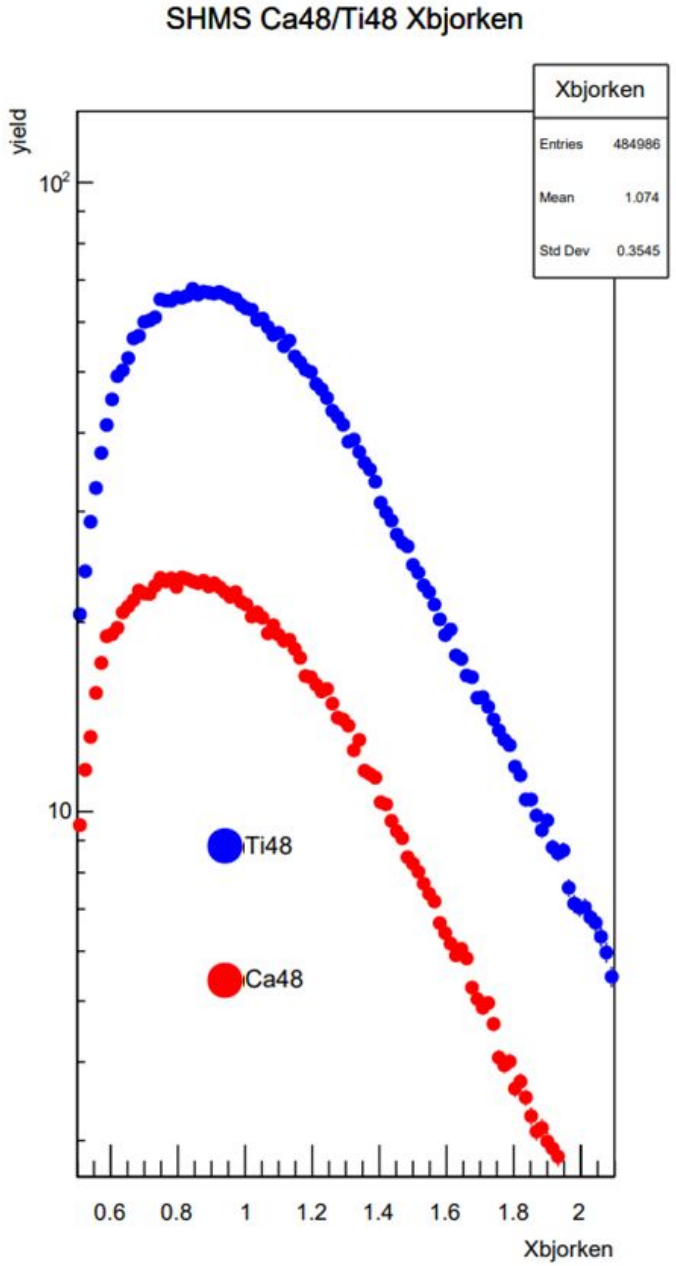
Once complete, will serve as nice comparison to CaFe, RGM, Dien's thesis data.

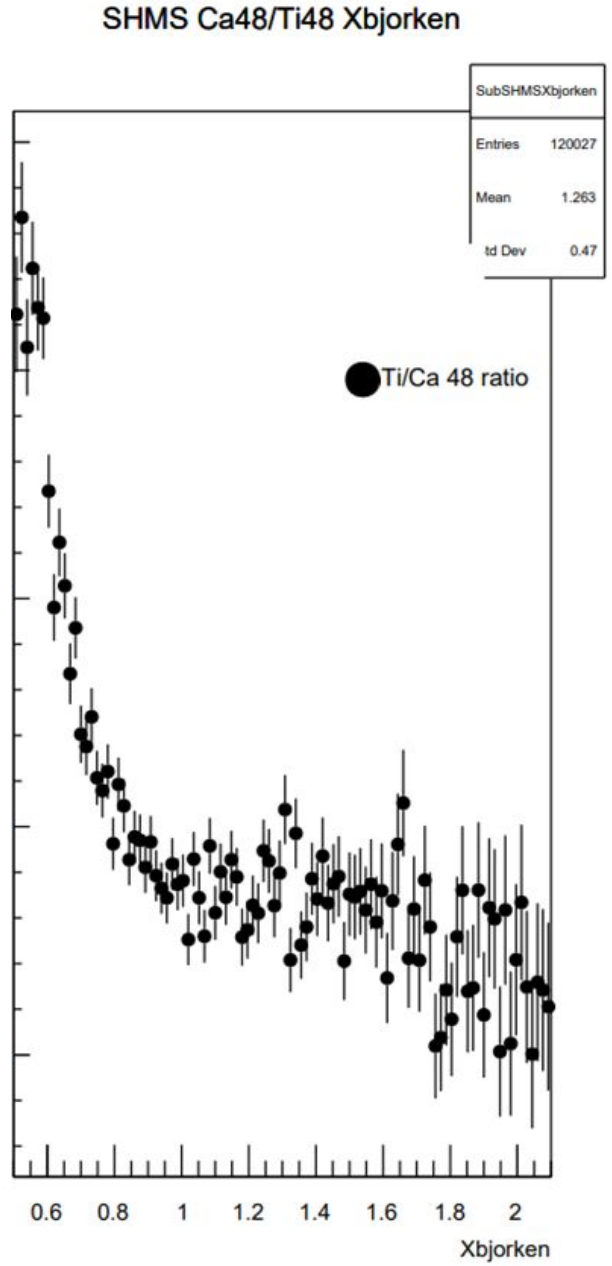


CA48/TI48 FROM XEM2

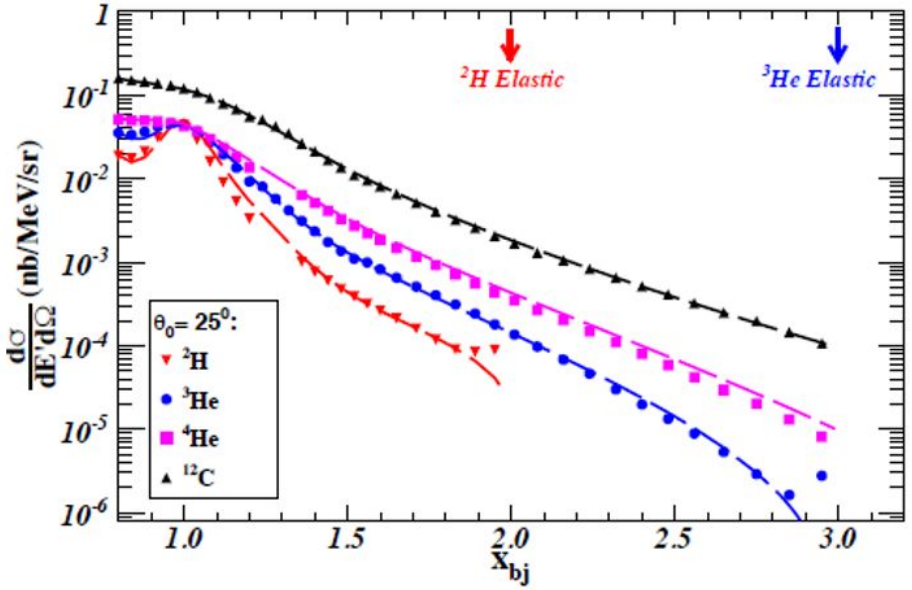
Thickness normalized yields

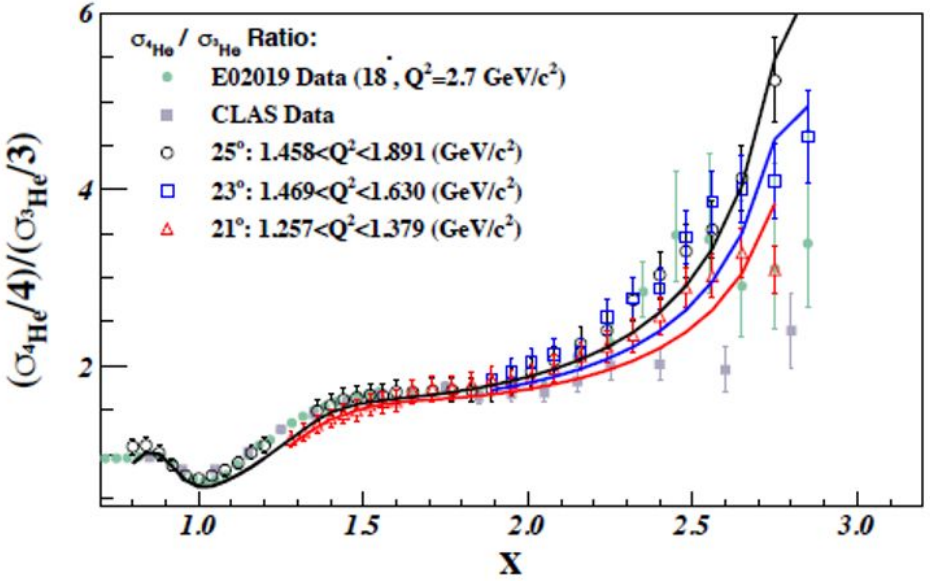
A = 48 ratio

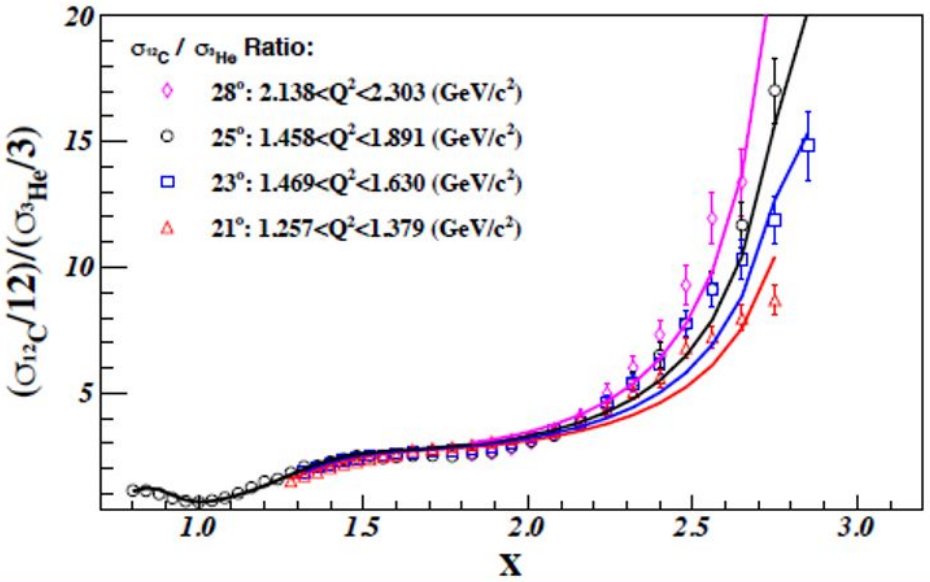




Can we see a second plateau?



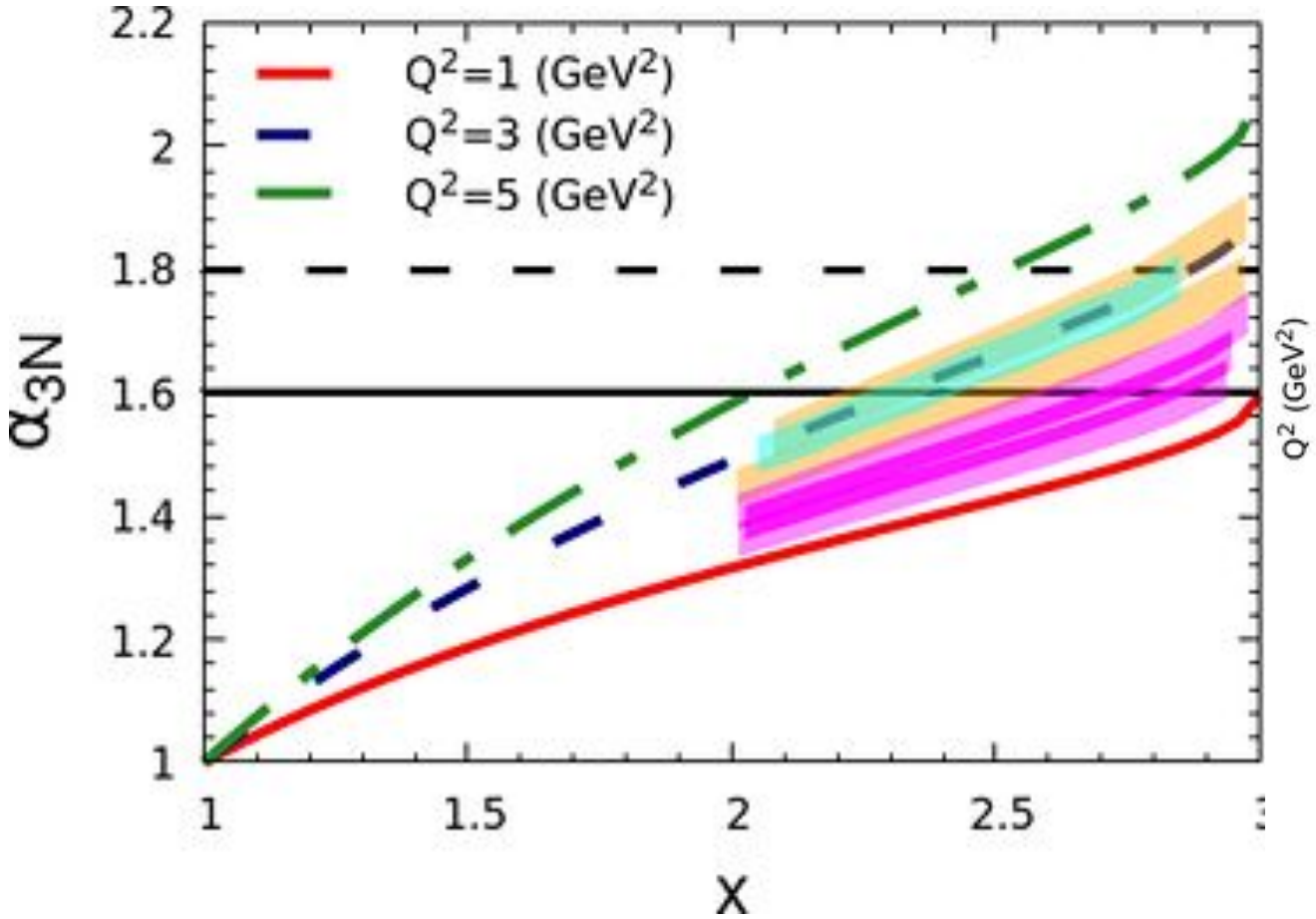


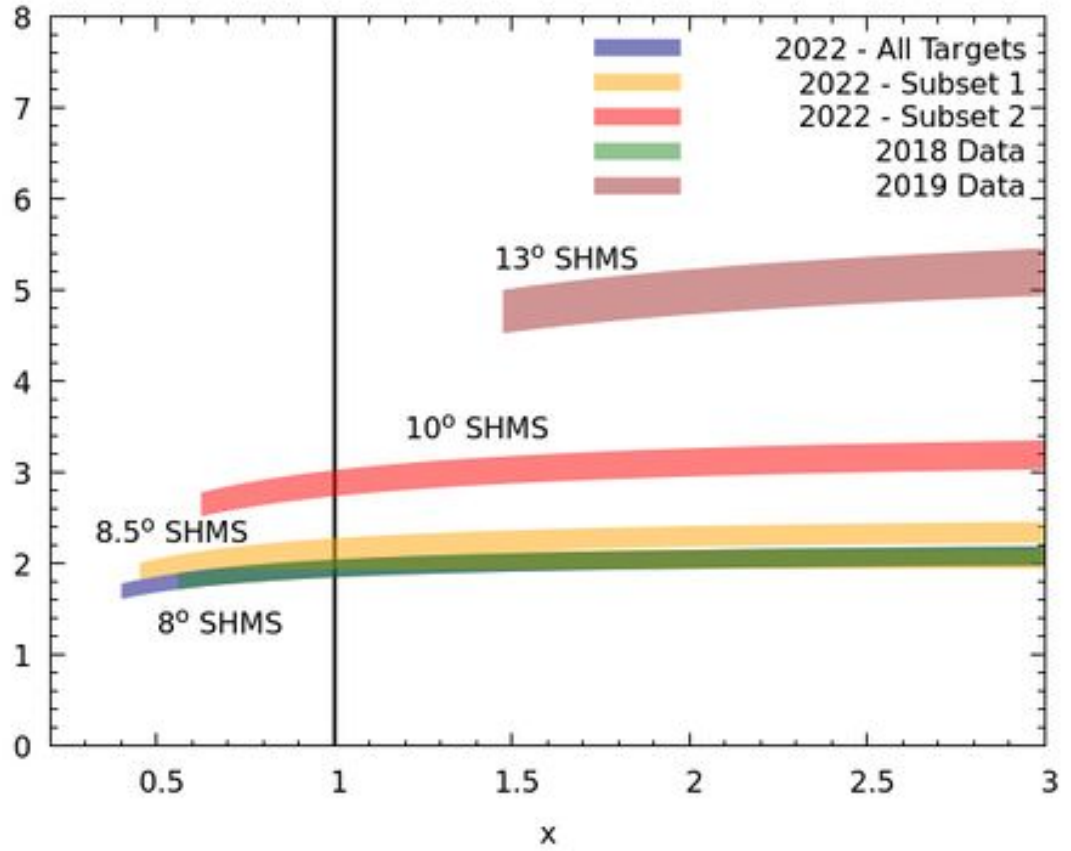


Deuteron: smeared SRC similar to 2H (A/D is ~flat) until x>1.8

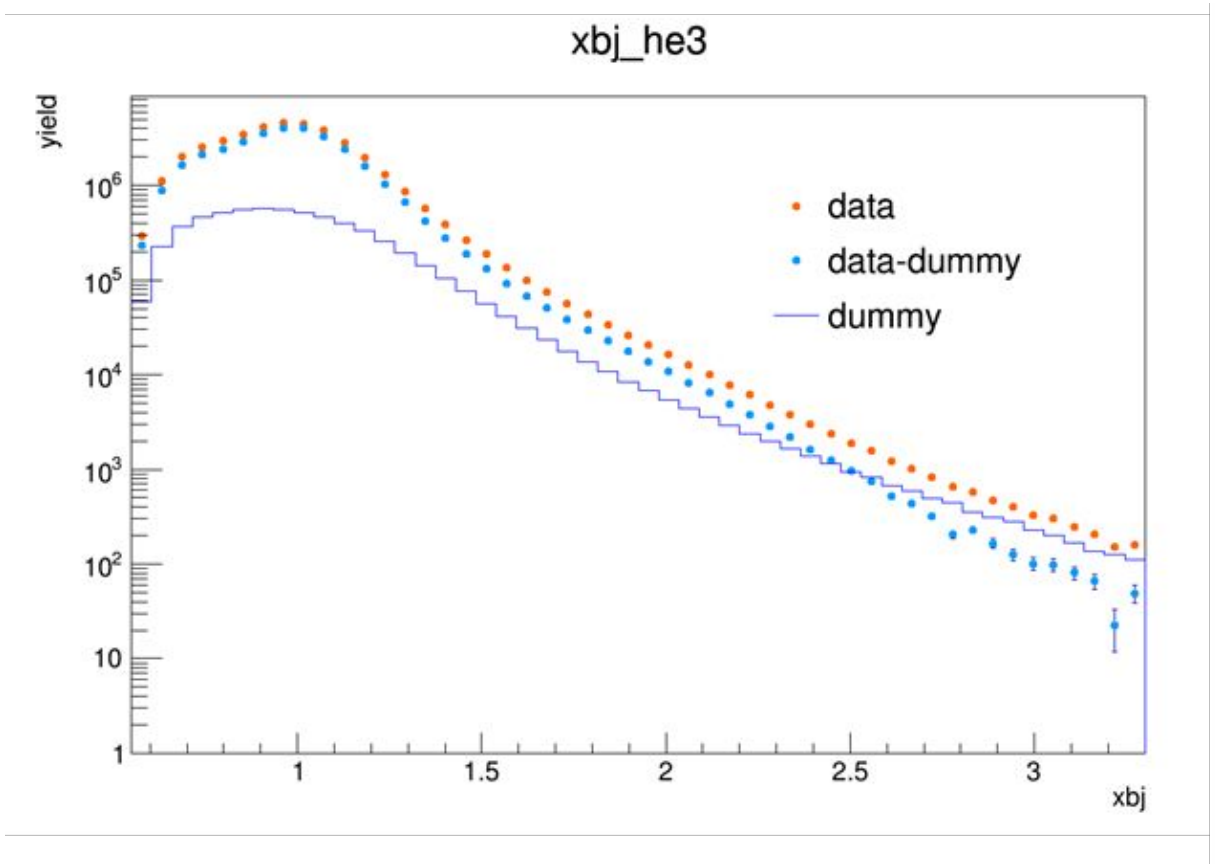
3He: cross section of stationary 3N-SRC begins to fall off closer to x=2.6. Sets in EARLIER at high Q^2

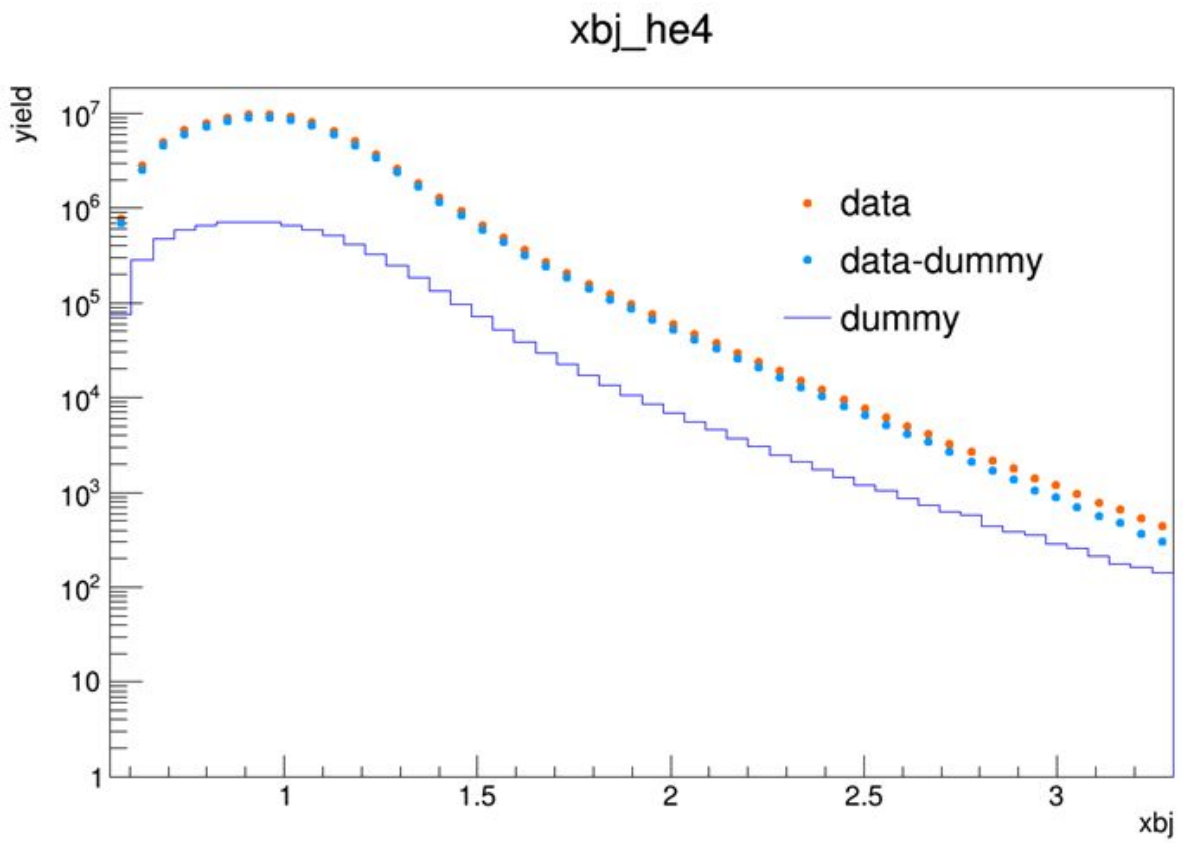
COVERAGE (COURTESY OF NADIA)



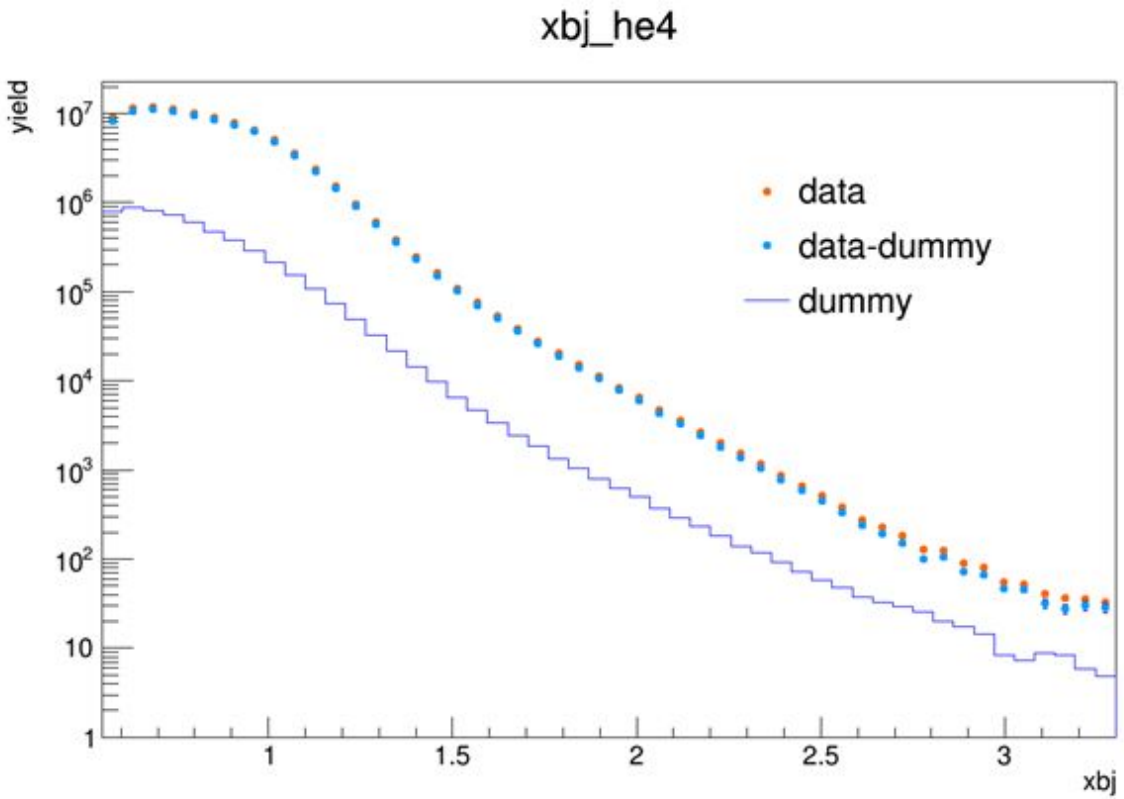


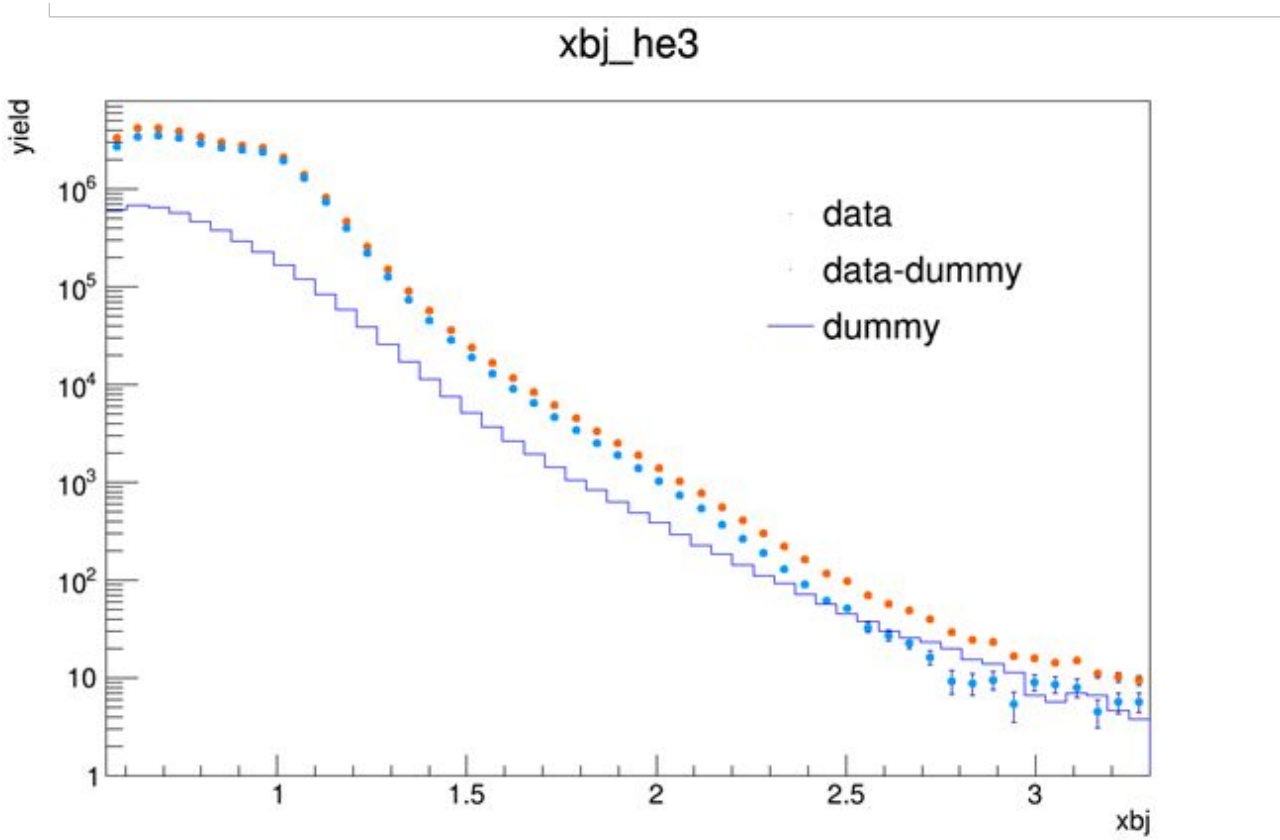
BURCU'S RESULTS: Yields of 8.5 Degrees 4He & 3He



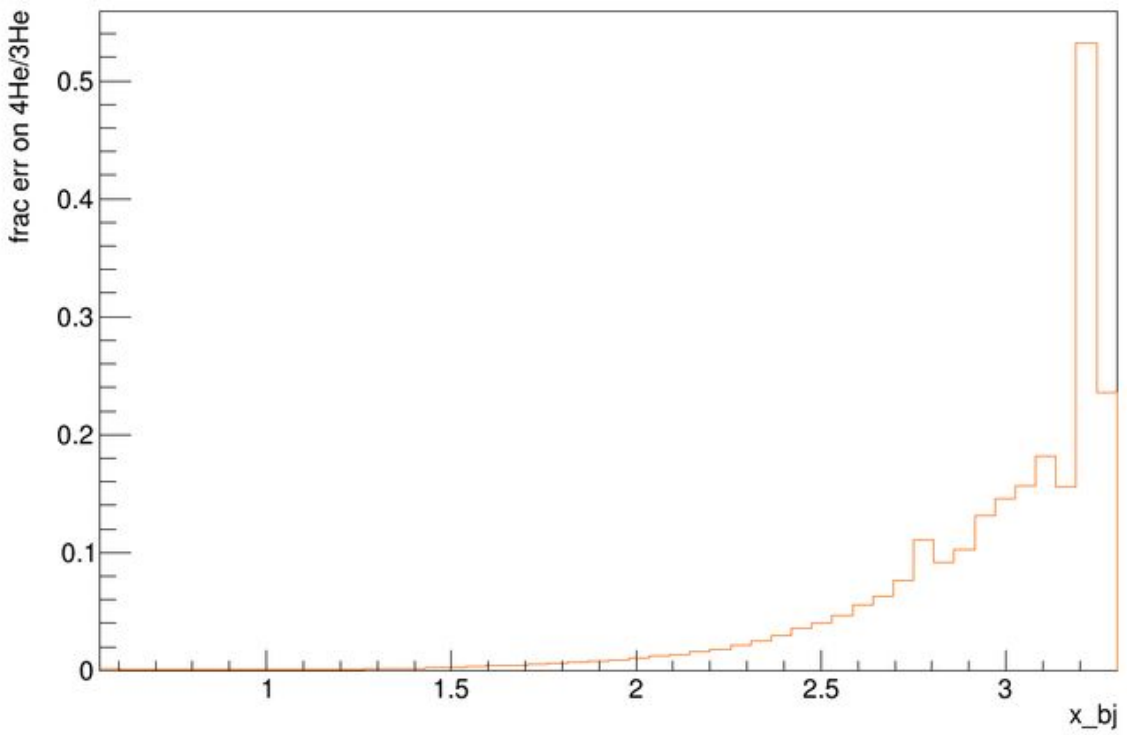


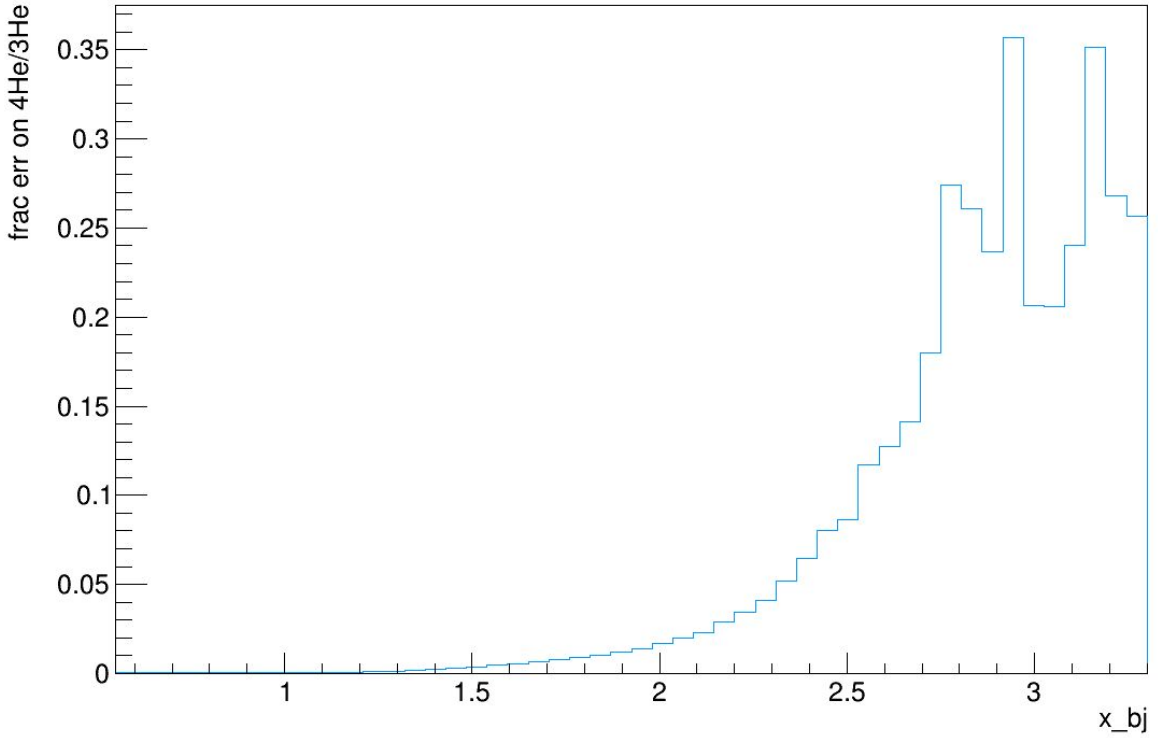
BURCU'S RESULTS: Yields of 10 Degrees 4He & 3He





FRACTIONAL ERROR ON THE 8.5 & 10 DEG HE4/3 RATIO





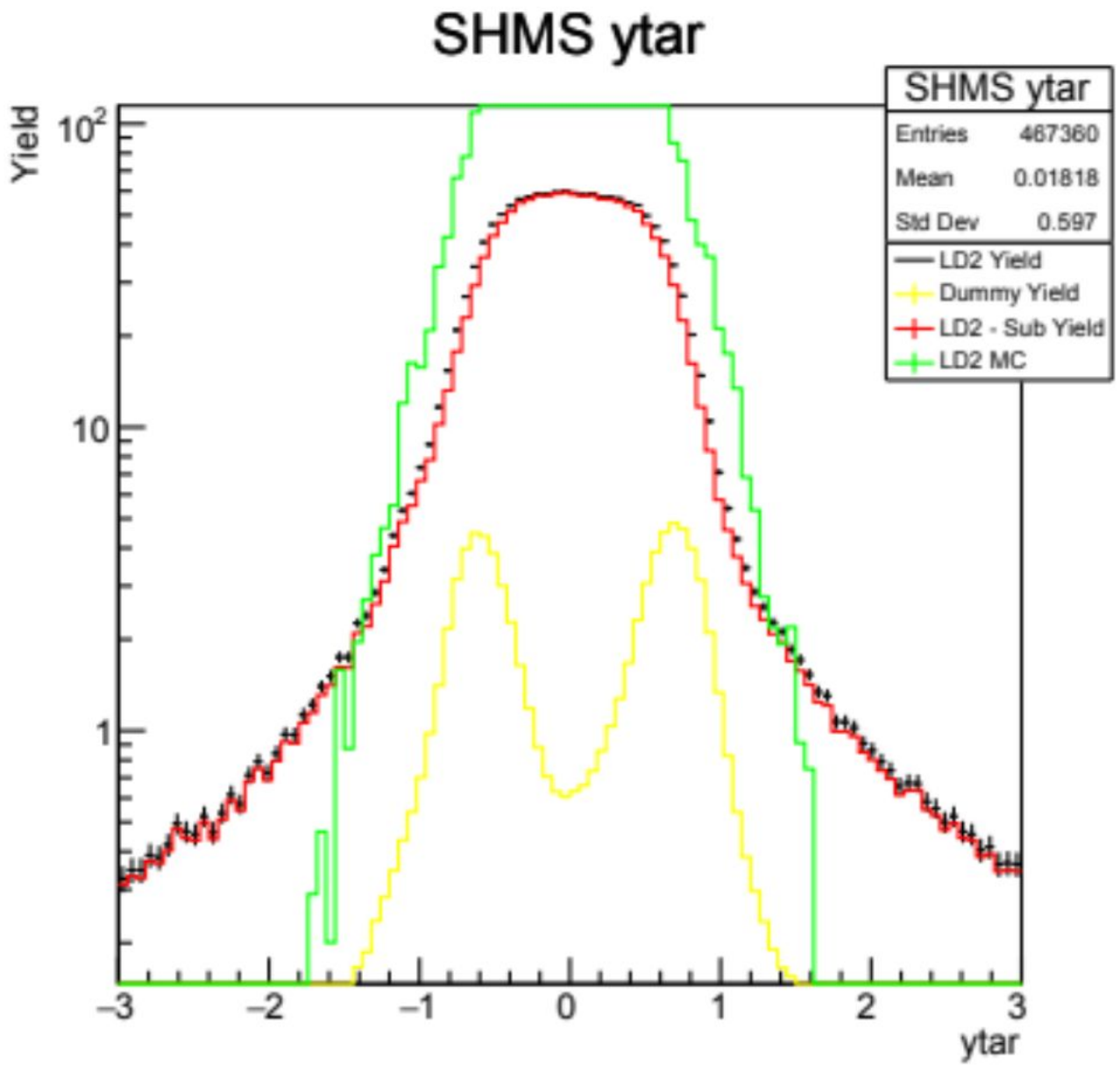
3N data also taken on C, Be, 40Ca

LOOKING FORWARD

Still working on calibrations, data quality checks, and preliminary results.

Also working on comparisons between Monte Carlo simulations of our detector & real data

Courtesy of Zoe Wolters (UNH):



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To be photographed:
Ramon O - UTK
Sebastian M - SMU

Thank You!