

Proposal Proposal

I can make a first draft for 2 weeks from now.

MDB

31-MAR-2017

Proposed changes

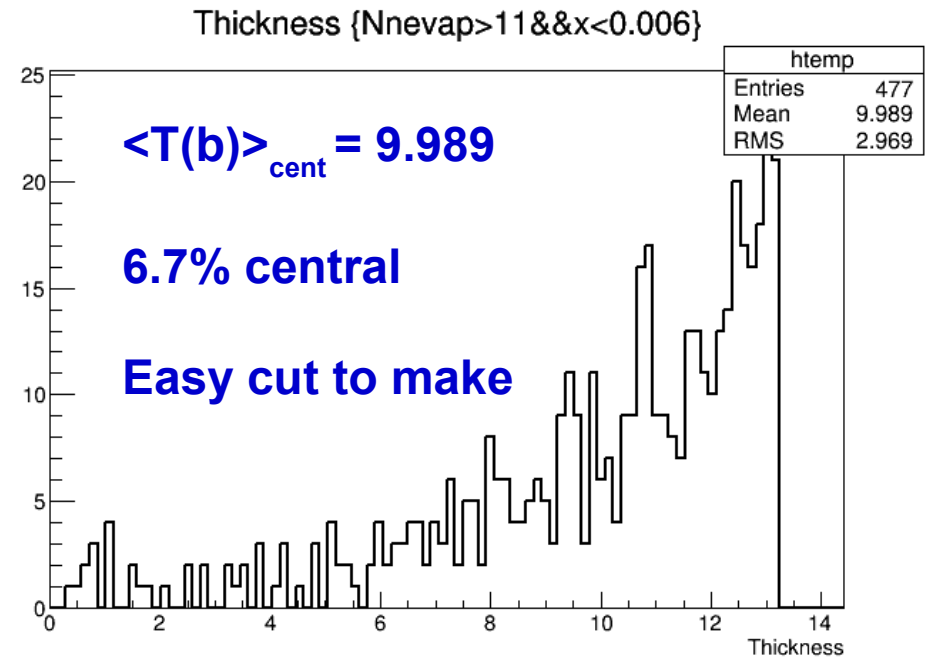
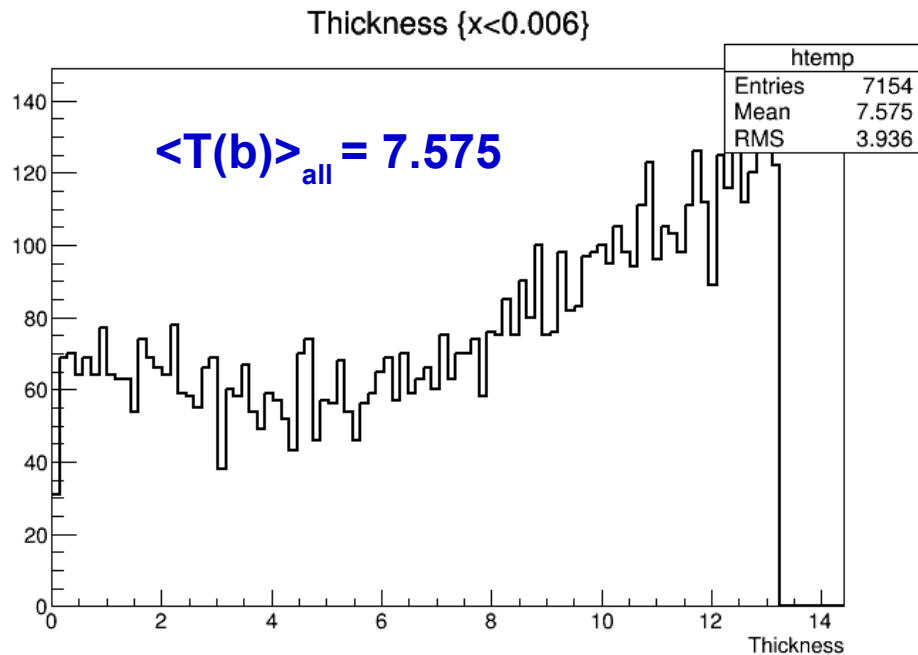
- Include **low x** geometry tagging
 - Suggested by referee (wisely!).
 - BeAGLE low-x shadowing wasn't available 1 year ago, so we steered away from it.
- Make the narrative more JLEIC physics driven
 - Tie basically the same deliverables to physics more explicitly. Think through the order a bit.
- Better justify or scale back our promises regarding CLAS12?

Physics organization (I)

- Geometry tagging to enhance Q_s^2 at JLEIC:
 - $\langle T(b) \rangle_{\text{cent}} / \langle T(b) \rangle_{\text{all}}$ as a function of x for $\text{genShd}=2,3$
extending down to low x .
 - Add $e+U$ and see if we can get an even better enhancement of $T(b)$ due to U -deformation.
- Precision $G(b)$ from diffraction at JLEIC
 - Requires good subtraction of incoherent events.
 - Fix E_{exc} in *sartre* using BeAGLE studies.
 - Investigate value of forward photon tagging.

Quick first, naïve, look at $T(b)_{\text{cent}}$

BeAGLE (Pythia): 10x40GeV/A ePb, $1 < Q^2 < 20 \text{ GeV}^2$, $0.01 < y < 0.95$,
Note: $x < 0.006$ is 28.6% of sample.



$$\langle T(b) \rangle_{\text{cent}} / \langle T(b) \rangle_{\text{all}} = 1.32$$

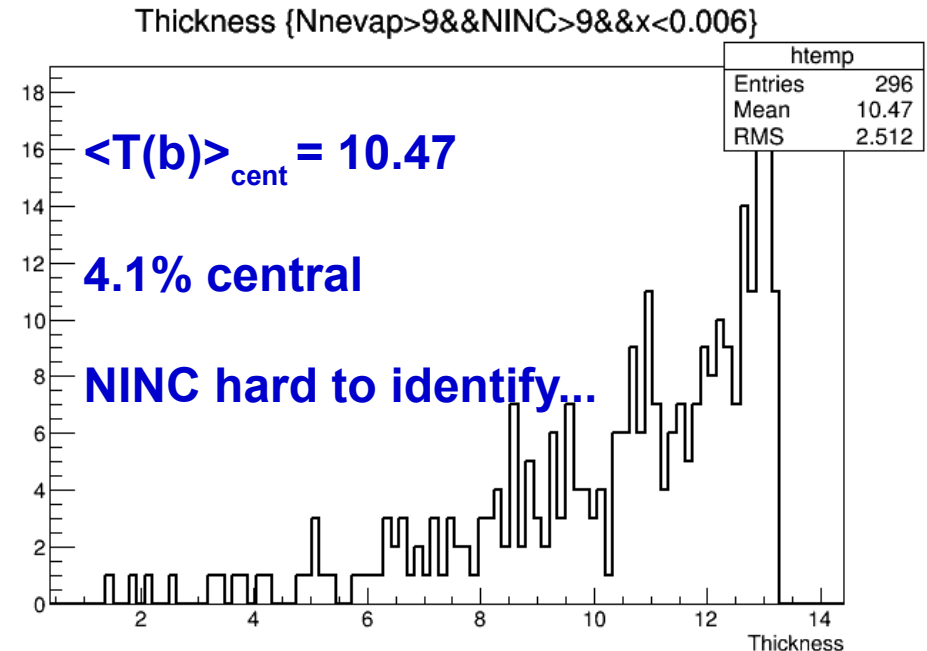
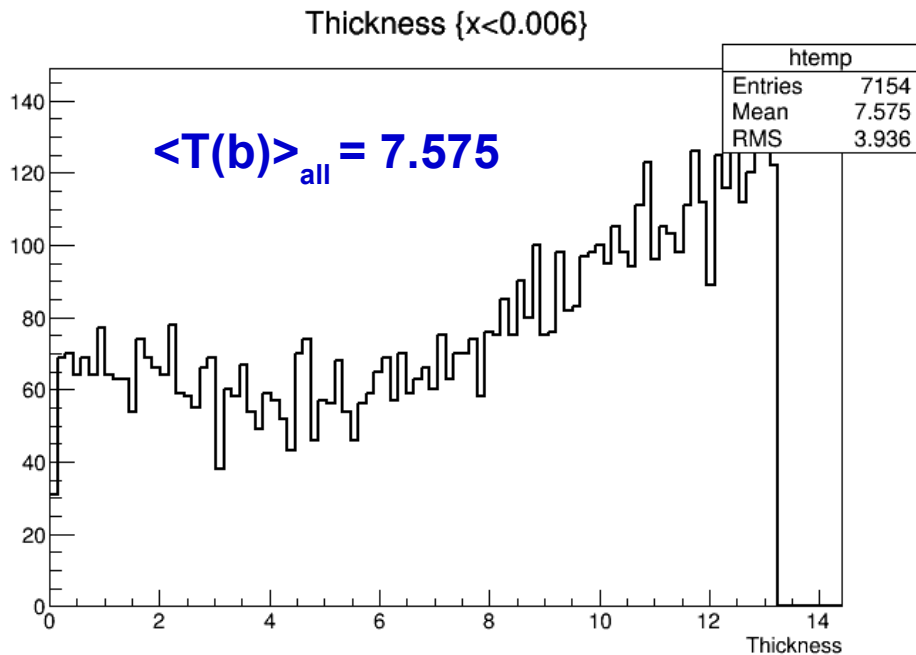
$$A_{\text{eff}} / A = (1.32)^3 = 2.29$$

$$E_{\text{eff}} / E = ?$$

Note: Results are from me & Liang. Quick and dirty nature of plotsmanship all me!

Quick first, naïve, look at $T(b)_{\text{cent}}$

BeAGLE (Pythia): 10x40GeV/A ePb, $1 < Q^2 < 20 \text{ GeV}^2$, $0.01 < y < 0.95$,
 Note: $x < 0.006$ is 28.6% of sample.



$$\langle T(b) \rangle_{\text{cent}} / \langle T(b) \rangle_{\text{all}} = 1.38$$

$$A_{\text{eff}} / A = (1.32)^3 = 2.64$$

$$E_{\text{eff}} / E = ?$$

Note: Results are from me & Liang. Quick and dirty nature of plotsmanship all me!

Much more to do

- More systematic map of %centrality vs. Enhancement for various types of cuts.
- Go to even lower x
- What is a realistic experimental version of N_{INC} ?
- Does it add a lot of value over just N_{nevap} ?
- Etc. Etc.

Physics organization (II)

- Geometry tagging & color propagation (JLEIC):
 - Vary d using central & peripheral Ca, Pb, U. Here we **BENEFIT** from not going to too low x where multinucleon shadowing makes the definition of " d " fuzzy.
 - Look at nuclear remnant as well as $x_F > 0$: Does the "lost" energy go into fatter current jets? Semi-hard gluons? Scattering spectator nucleons? Heating the nucleus so that it evaporates/breaks up more?

My reasons for BeAGLE & CLAS12

- BeAGLE is the best tool for optimizing eA for (JL)EIC, but we are relying on E665 data to tune the nuclear response. I want better data!
 - Better detectors
 - Better triggers/ understanding of diffraction vs. DIS
- JLAB user community is one of the strengths of JLEIC. Engage JLAB users in JLEIC projects.
- Can we get a handle already on the question: Where does the "lost" energy go in cold nuclei?

My concerns: BeAGLE & CLAS12

- Liang and Guohui and I are already pretty oversubscribed. We can, at best, just support the effort. It would need to be driven by someone else (i.e. Raphael).
- Raphael is important in understanding the PyQM / color propagation / where does the energy go? JLEIC physics. Maybe he is oversubscribed already too...