

Next steps after Pavia

First of all, thank you very much for all your work leading up to the Pavia workshop. It was absolutely essential in making this workshop productive and successful.

Since the workshop, we have had a follow-up discussion with the Complementarity (Detector) Working Group, c.f.

https://wiki.bnl.gov/eicug/index.php/Yellow_Report_Complementarity

The materials for our discussion may be found here:

<https://indico.bnl.gov/event/8656/>

Looking ahead, we would like to request:

- (near term) complete kinematic plots and ready them for archiving,
- continued studies towards physics capability and detector needs,
- discussion how we best integrate our work in the Yellow Report

Next steps - kinematic distributions

In the lead-up to the Pavia workshop we worked towards kinematic distributions for our key physics processes, guided by select common collision energies and species, c.f.

<https://indico.bnl.gov/event/8270/>

Based on the current BNL design, we suggest, as a starting point for our physics simulations, to study one or several of the following beam energy combinations:

p-e	275 on 18 GeV	100 on 10 GeV	100 on 5 GeV	41 on 5 GeV
d/ ³ He/ ⁴ He-e	110 on 18 GeV	110 on 10 GeV		41 on 5 GeV
C/ ⁴⁰ Ca/Cu-e	110 on 18 GeV	110 on 10 GeV		41 on 5 GeV
Au-e	110 on 18 GeV	110 on 10 GeV		41 on 5 GeV

(For nuclei the energy refers to the energy per nucleon)

Please assume integrated luminosities of 10 fb⁻¹ and 100 fb⁻¹

A polarization of 70% may be assumed for electrons and light ions

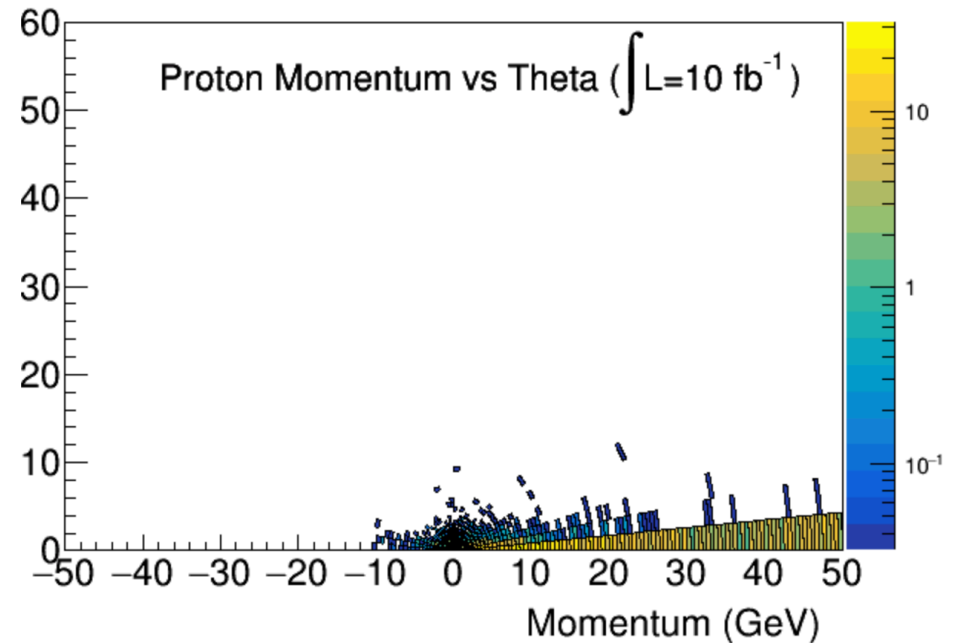
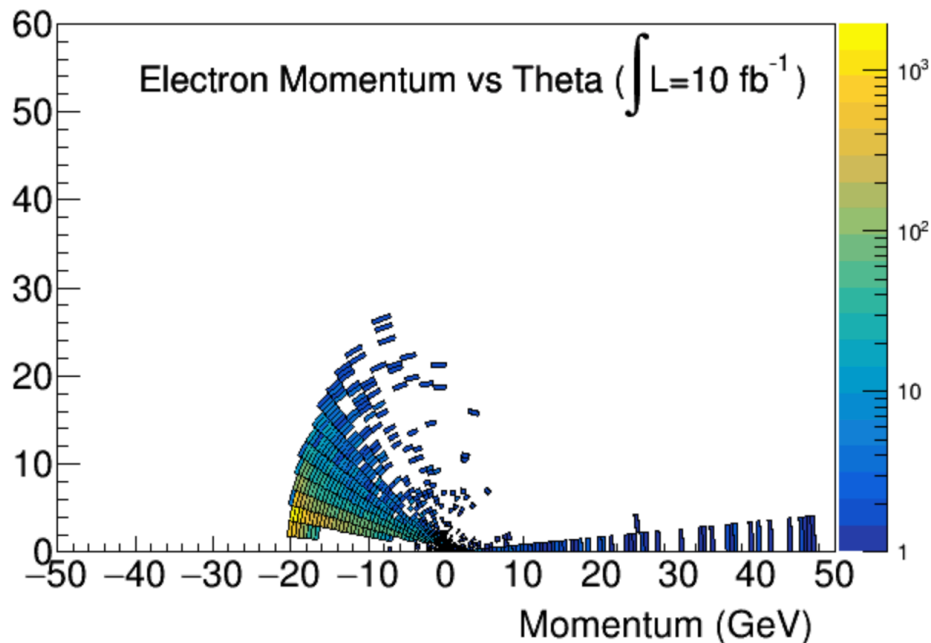
Next steps - kinematic distributions

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<https://indico.bnl.gov/event/8270/>

And some common plots, c.f.

https://wiki.bnl.gov/eicug/index.php/Yellow_Report_Physics_Common#Kinematic_coverage_files



Next steps - kinematic distributions

We need to complete, document, and archive this work and do so in a way that will make it possible to address more detailed questions, e.g. concerning correlations.

The PWG conveners have proposed to use the wiki pages for this purpose, c.f.

https://wiki.bnl.gov/eicug/index.php/Yellow_Report_Physics_Common#Kinematic_coverage_files

Our request is for you to prepare and share one archive (.zip, .tar, etc.) per process and collision energy/system with:

- a README with species and energy, generator used, generator input file,
- a root output file of simulated data (reasonably sized),
- output figures with documented scripts to generate them,
- a short summary of main observations towards detector requirements

Conveners will centrally collect your input and populate the wiki (or other).

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The third workshop (Washington DC) upcoming September 17-19 aims to:

present mature studies of detector requirements from physics processes, balance detector concepts versus impact on physics measurements. Discuss possible systematics reduction among complementary detector choices. Complete final “to-do” list for YR. (Thomas Ullrich and Rolf Ent, EICUG Meeting, January 23, 2020).

There will likely also be an intermediate meeting of the YR community as a whole, originally intended to coincide with the EICUG Meeting upcoming August 3-7 in Miami, FL.

The above is *lots* of work. Let's aim to keep momentum into Summer. Let's also make a start to look ahead to integrating our work into the YR.

YR draft outline:

http://www.eicug.org/web/sites/default/files/YRs_Outline_v6_draft.pdf

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YR draft outline:

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This draft has four volumes. The draft outline does *not* map directly onto the organization of the working groups (the physics working groups in particular).

The suggested starting point for our discussion is Volume II: Physics

8 - EIC Measurements and Studies

Collected sub-group input goes here. (The outline does not contain a further breakdown for this chapter.)

9 - Detector Requirements

Section 9.3 “Jets and Heavy Quarks” is to detail what the specific requirements are for our working group and why. This is not the place for details on studies, but rather to collect main outcomes.