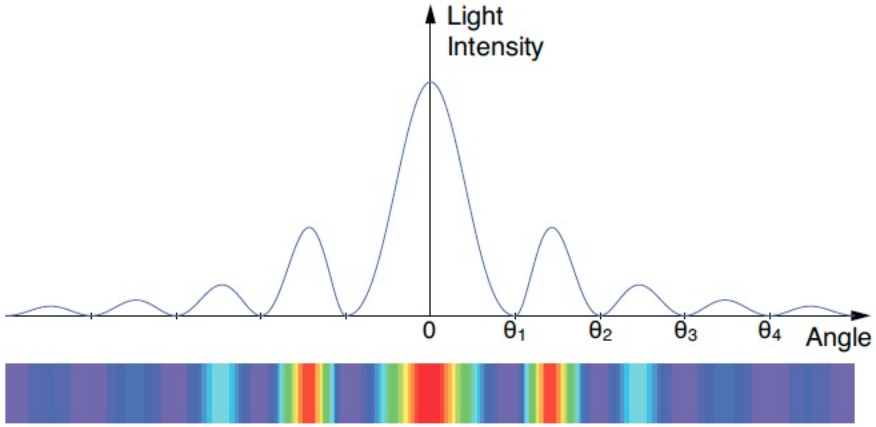
VM program in *eA* at the EIC – ATHENA

(& DVCS)

with S. Fazio



Series of study

I. Baselines and setups
II. PHP, ***t*** reco, and mass
III. Preliminary proposal of ϕ
IV. First attempt full simulation
V. Updates

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BNL

10. 25. 2021

Status

Diffractive phi:

- Unfortunately, the bug of nuclei PDG code for eA remains opened. **No eA results today!**
- eSTARLight, sample promised soon by Spencer.

[plan(?) for diffractive phi is to have: BeAGLE, Sartre, and eSTARLight]

- Analysis chain developed on ep.

DVCS-D

- Samples are made ready for Brian Page.

DVCS-ep

- First look on fully simulated results and found two issues (see later).

S3: after-burned samples

eA:

✓ DIFFRACTIVE_PHI/Sartre

✗ DIFFRACTIVE_PHI/BeAGLE

✗ DIFFRACTIVE_PHI/eSTARLight

DVCS-D (includes DVCS-p and DVCS-n):

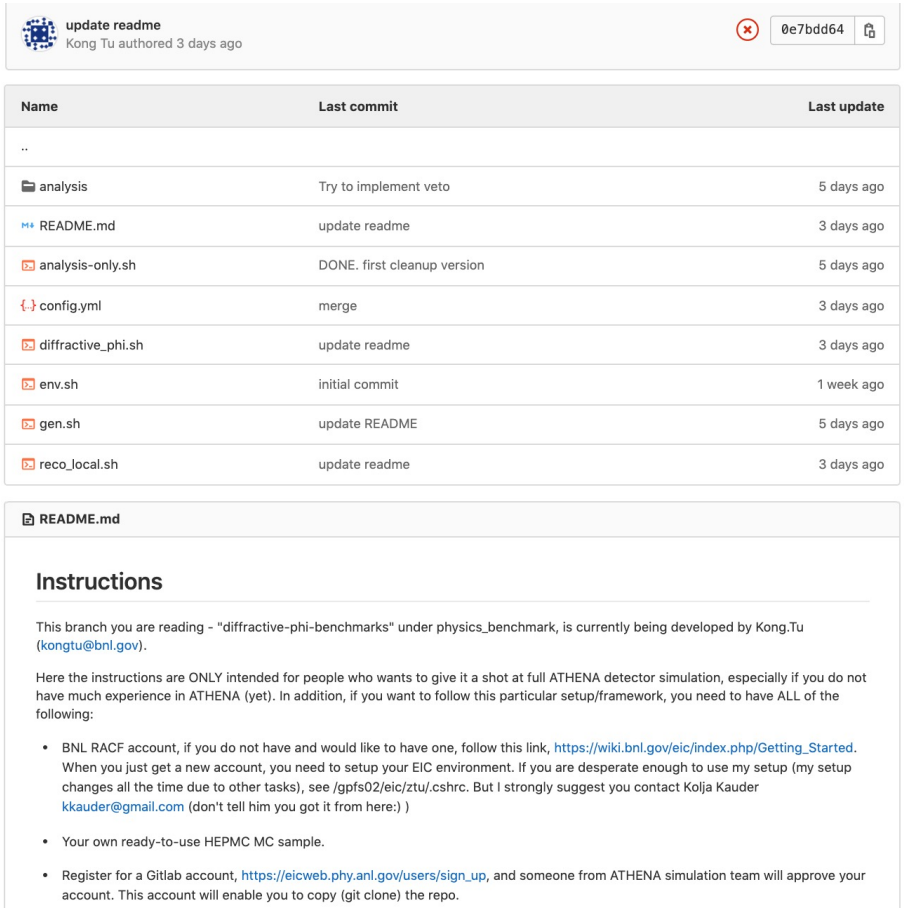
✗ Not yet.

DVCS-ep:

✓ all 3 energies.

Gitlab! Please take whatever you need!

Diffractive_phi



update readme
Kong Tu authored 3 days ago
0e7bdd64

Name	Last commit	Last update
..		
analysis	Try to implement veto	5 days ago
README.md	update readme	3 days ago
analysis-only.sh	DONE. first cleanup version	5 days ago
config.yml	merge	3 days ago
diffractive_phi.sh	update readme	3 days ago
env.sh	initial commit	1 week ago
gen.sh	update README	5 days ago
reco_local.sh	update readme	3 days ago

README.md

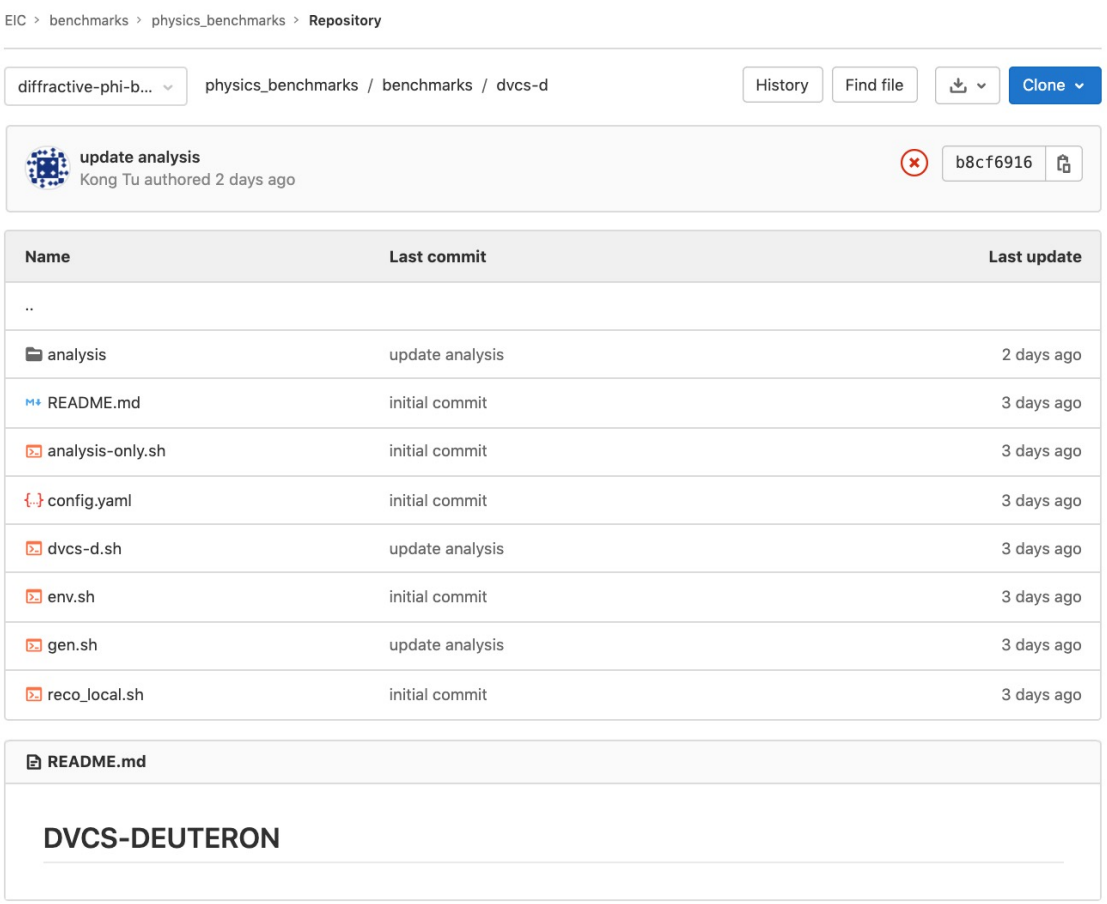
Instructions

This branch you are reading - "diffractive-phi-benchmarks" under physics_benchmark, is currently being developed by Kong.Tu (kongtu@bnl.gov).

Here the instructions are ONLY intended for people who wants to give it a shot at full ATHENA detector simulation, especially if you do not have much experience in ATHENA (yet). In addition, if you want to follow this particular setup/framework, you need to have ALL of the following:

- BNL RACF account, if you do not have and would like to have one, follow this link, https://wiki.bnl.gov/eic/index.php/Getting_Started. When you just get a new account, you need to setup your EIC environment. If you are desperate enough to use my setup (my setup changes all the time due to other tasks), see /gpfs02/eic/ztu/.cshrc. But I strongly suggest you contact Kolja Kauder kkauder@gmail.com (don't tell him you got it from here:))
- Your own ready-to-use HEPMC MC sample.
- Register for a Gitlab account, https://eicweb.phy.anl.gov/users/sign_up, and someone from ATHENA simulation team will approve your account. This account will enable you to copy (git clone) the repo.

dvcs-d



EIC › benchmarks › physics_benchmarks › Repository

diffractive-phi-b... | physics_benchmarks / benchmarks / dvcs-d | History | Find file | Clone

update analysis
Kong Tu authored 2 days ago
b8cf6916

Name	Last commit	Last update
..		
analysis	update analysis	2 days ago
README.md	initial commit	3 days ago
analysis-only.sh	initial commit	3 days ago
config.yaml	initial commit	3 days ago
dvcs-d.sh	update analysis	3 days ago
env.sh	initial commit	3 days ago
gen.sh	update analysis	3 days ago
reco_local.sh	initial commit	3 days ago

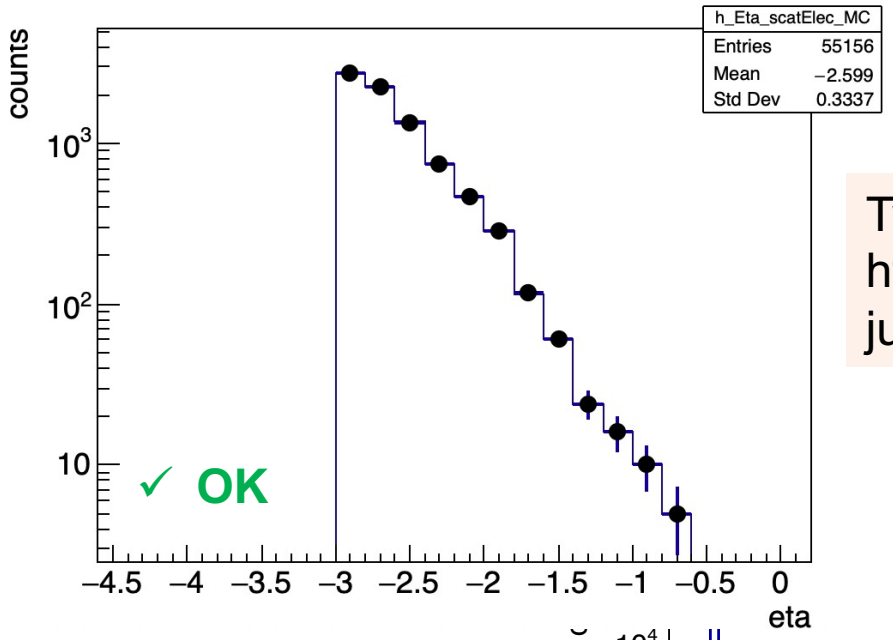
README.md

DVCS-DEUTERON

https://eicweb.phy.anl.gov/EIC/benchmarks/physics_benchmarks/-/tree/diffractive-phi-benchmarks/benchmarks

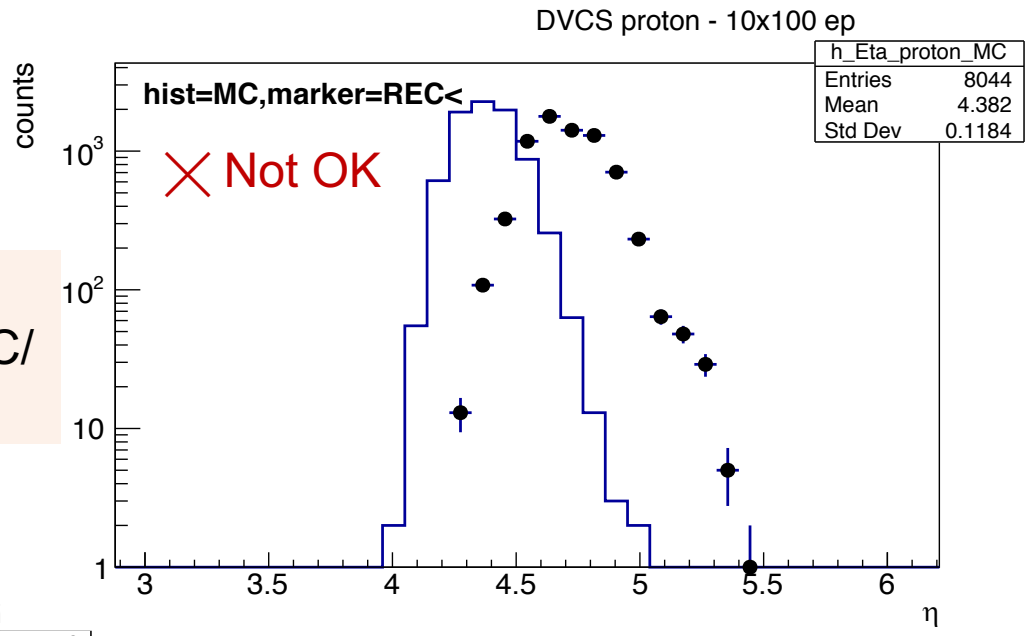
DVCS ep – results

25 mrad = 4.38 in eta

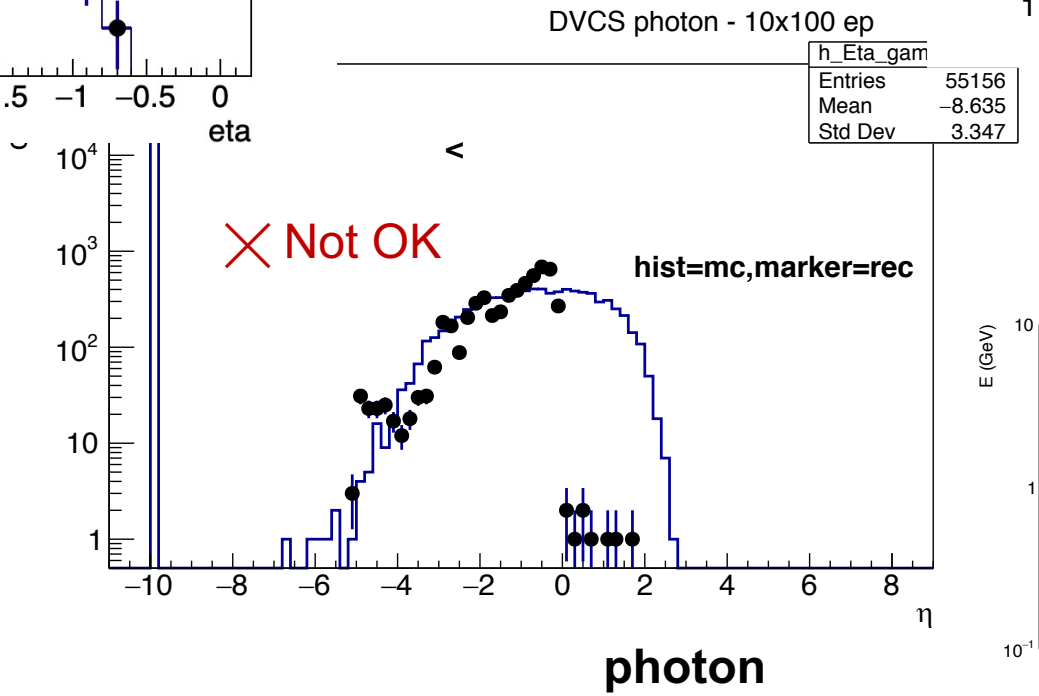


scatElec

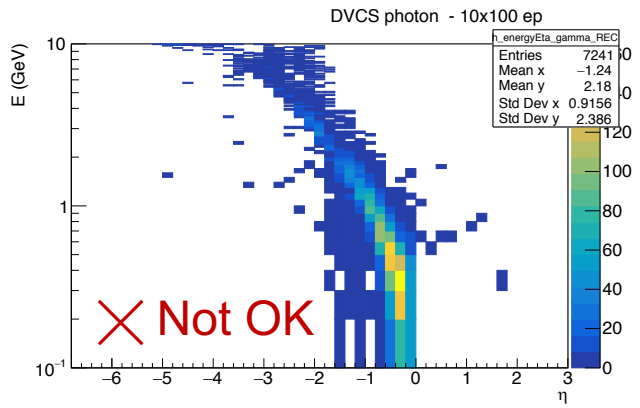
Two issues reported, https://eicweb.phy.anl.gov/EIC/juggler/-/issues/67



Scattered proton in FF



photon



Summary

- At least 2 (3) outstanding issues, https://eicweb.phy.anl.gov/EIC/juggler/-/issues/67

None of these problems were noticed before.

- DVCS-ep full simulation chain takes ~ < a few hours for 10k events. Everything is setup, so as other benchmarks.

- We should discuss a plan if the full simulation does not work.