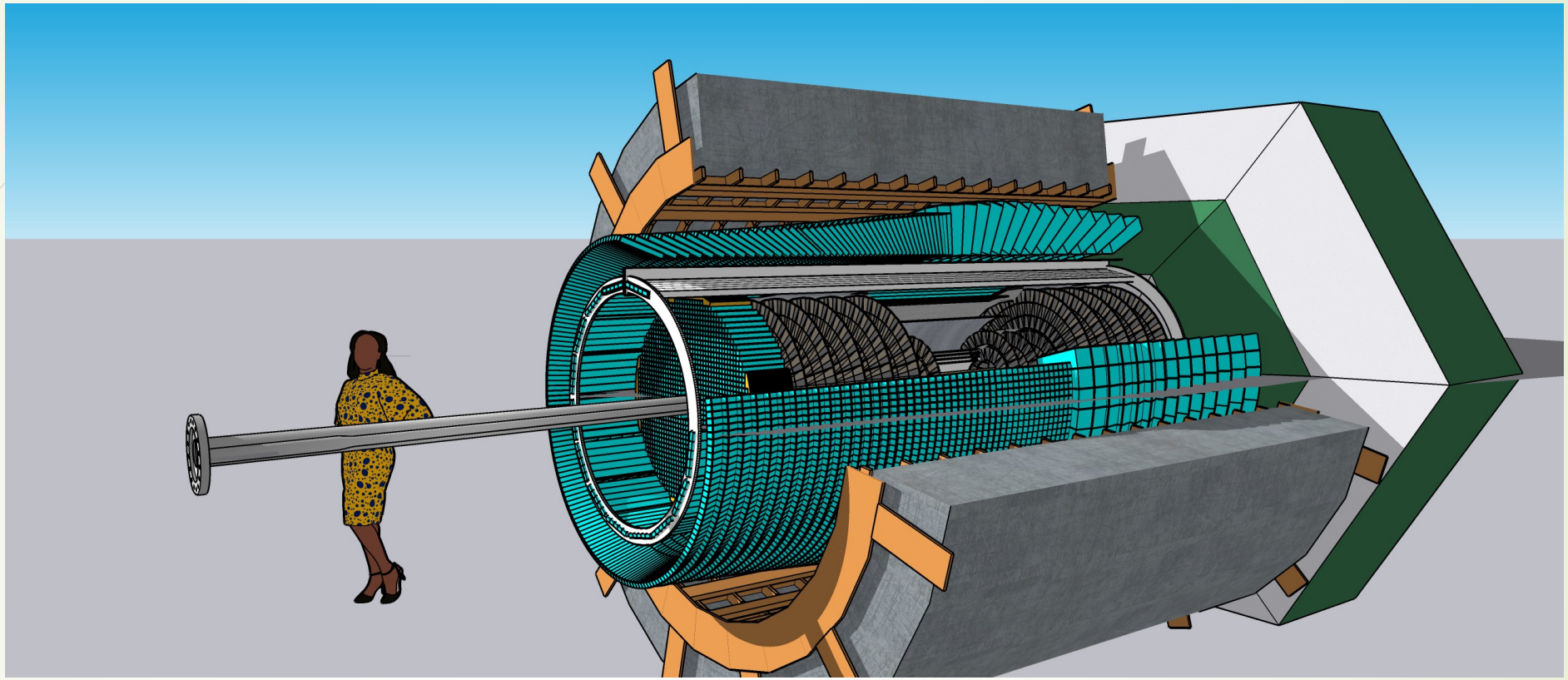
CORE Working Group Meeting

28 July 2021



Notes on DELPHES simulations for CORE

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Steps to a DELPHES Simulation

- Install DELPHES (and tcl-tk): see e.g. indico.jlab.org/event/461/
- Get the CORE control card for DELPHES (tcl language)
  - https://indico.jlab.org/event/461/contributions/8805/attachments/7209/9935/delphes_EIC_CORE_2.5T_Grassi.tcl
  - You may want to tweak it a bit.
- Get (or generate) a HepMC2 event file for your favorite process
- ../DelphesHepMC2 cards/delphes_EIC_CORE[…].tcl output/your_output.root your_path/your_input/your_HepMC2.hepmc
- Open output root file in root and run
  >root[] Delphes->Make_Class();
  - Edit as needed for your analysis

DELPHES requires HepMC2 formatted input

- I have only used text files, not sure of binary or compressed options.
- DIS (PYTHIA) files at BNL files (message from Brian Page bpage@bnl.gov)
  - The files used to generate the plots in the Beam Effects write-up are at: /gpfs/mnt/gpfs02/eic/bpage/home/eicBeamSimu/Pythia8/headonTestJin/
  - Look for test_crossDivNrgCrab_*_v2.hepmc .
    The 'crossDivNrgCrab' indicates all effects are included, and the rest of the file name should be self-documenting.
    Currently, these are saved as HepMC2 as Delphes seems to choke on HepMC3.
- General DIS (PYTHIA) files available at Jlab (M.Dieffenthaler)
  - We have a lot of MC data available in /work/eic/mc
    and the ATHENA and ECCE directories in /work/eic2.

Coherent 4He DVCS code TOPEG

- I have installed it on Jlab farm.
- I will try to make it publicly available
- I also wrote a pure kinematic DVCS code, including output in HepMC2 format.
  - This can be a guide for either for output conversion from TOPEG or an inclusive DIS generator (electron only)