# ECCE Simulations

Status Report
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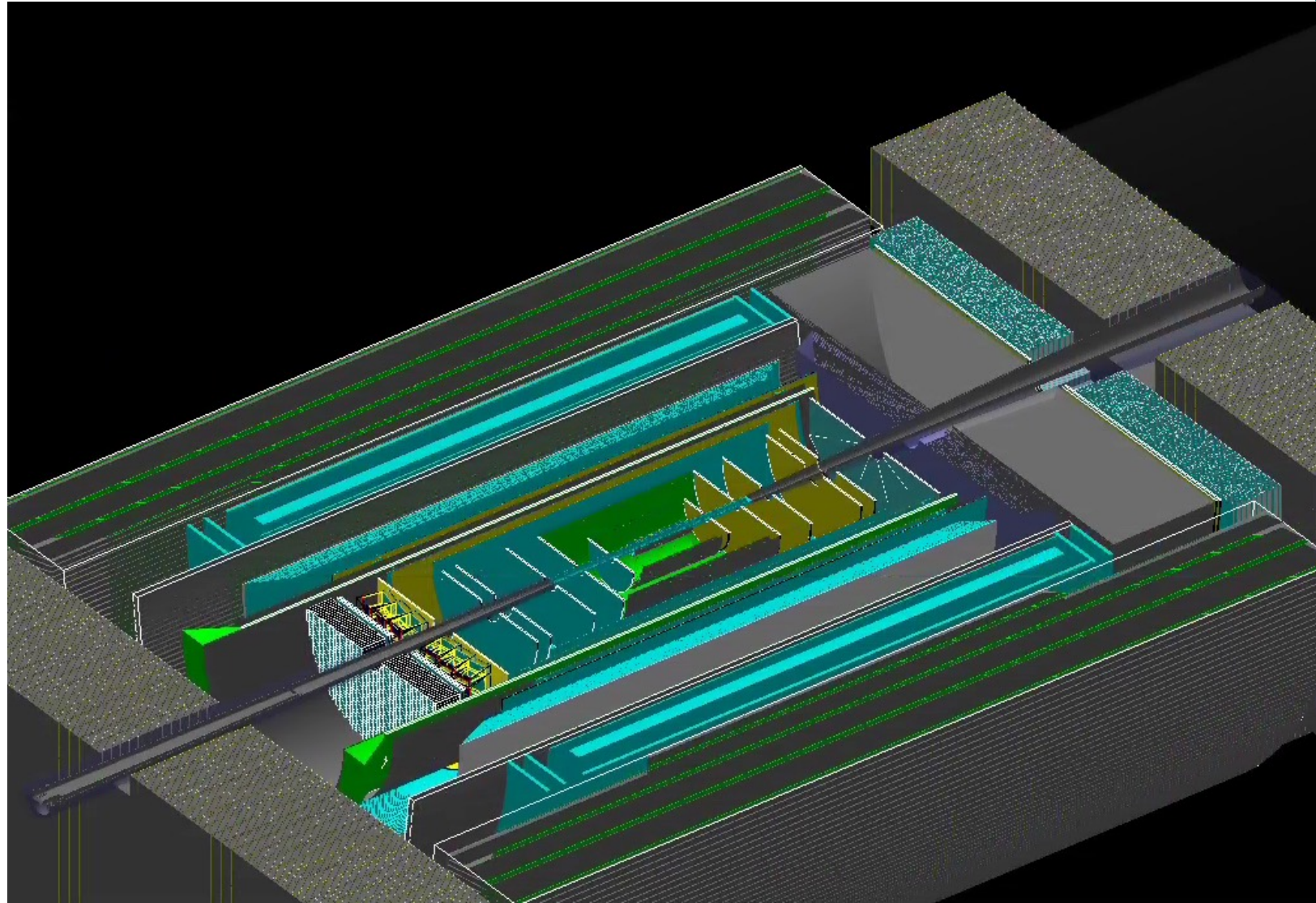
07/02/2021
**Tracking Meeting**

# Overview

- Production has started!
- We have 4 initial samples to check detector response and output info:
1. 5M single electron events from BNL
2. 5M single pion events from BNL
3. 5M low q^2 events from SIDIS PWG from Bates
4. 4M high q^2 events from SIDIS PWG from Jlab
- 1, 2, and 4 are in S3 storage
- 3 is in production

# ECCE June 2021 Concept (Barrel)

| Detector | Component Name | Brief description |
|---|---|---|
| Beam pipe | Central Beam Pipe | Be pipe |
| Beam pipe | Central Beam Chamber | Beam chamber Mar2020 model |
| | | |
| Tracking | Barrel vertex | ITS3 |
| Tracking | Barrel silicon | |
| Tracking | Barrel MPGD | |
| Tracking | h-going silicon layers | |
| Tracking | e-going silicon layers | |
| Tracking | h-going GEM | |
| Tracking | e-going GEM | |
| Tracking | Support barrel | |
| | | |
| Calorimetry | Backward EMCal | Hybrid |
| Calorimetry | Backward HCal | STAR |
| Calorimetry | Barrel EMCal | sPHENIX |
| Calorimetry | Barrel HCal | sPHENIX |
| Calorimetry | Forward EMCal | PHENIX |
| Calorimetry | Forward HCal | new |
| | | |
| PID | e-going TOF | |
| PID | h-going TOF | |
| PID | barrel TOF | |
| PID | mRICH | |
| PID | dRICH | |
| PID | hpDIRC | |

# Production setup and location

- Production setup corresponds to June 23rd 2021

- Output locations:
  ```
  eicS3/eictest/ECCE/MC/new/5f210c7/General/particleGun/singleElectron
  eicS3/eictest/ECCE/MC/new/5f210c7/General/particleGun/singlePion
  eicS3/eictest/ECCE/MC/ana.14/5f210c7/SIDIS/pythia6/ep_18x100lowq2
  eicS3/eictest/ECCE/MC/ana.14/5f210c7/SIDIS/pythia6/ep_18x100highq2
  ```

- Evaluators:
  - DST and evaluator production was split into 2 macros
  - Evaluators are located in <Output locations>/eval_00000
  - Of most interest to tracking group: tracking evaluator and event evaluator

- S3 access is bundled with latest ECCE build:
  ```
  source /cvmfs/eic.opensciencegrid.org/ecce/gcc-8.3/opt/fun4all/core/bin/ecce_setup.sh -n
  ```

- Everyone has read access, check with `mcs3 ls eicS3`

# Timeline

| Item | Task | Required by | Assignee | Status |
|------|------|-------------|----------|--------|
| 1 | Create top-level submission scripts | 27/5/21 | Cameron | Complete |
| 2 | Add site-specific production scripts | 1/6/21 | Cameron & co. | Complete |
| 3 | Beta-test production scripts at each site | 14/06/21 | Cameron & co. | Complete |
| 4 | Debug zombie files | 14/06/2021 | Cameron & co. | Complete |
| 5 | Complete detector subsystem simulation setup | 14/06/2021 | Detector WG | Complete |
| 5.1 | tracking | 14/06/2021 | Xuan and Nilanga | Complete |
| 5.2 | PID | 14/06/2021 | Greg and Xiaochun | Complete |
| 5.3 | Calorimeter | 14/06/2021 | Friederike and Yongsum | Complete |
| 5.4 | Far forward | 14/06/2021 | Michael, Igor and Yuji | Complete |
| 6 | Discuss implementation/placement of ECCE | 17/6/21 | All | Complete |
| 7 | Relay production requirements for Campaign 1 | 17/6/21 | Physics WG | In progress |
| 8 | Full detector integration in simulation and reconstruction | 18/6/21 | Simulations WG | Complete |
| 9 | Update top-level submissions with PWG info | 18/6/21 | Cameron | In progress |
| 10 | Define production site tasks | 21/6/21 | Prod. Managers | In progress |
| 11 | Start 10M particle gun and/or SIDIS events | 22/6/21 | Prod. Managers | Complete |
| 12 | Analyse 10M particle gun events and SIDIS events | 25/6/21 | Physics, Computing WGs | In progress |
| 13 | Meet with PWGs regarding particle gun and SIDIS sim validation | 29/6/21 | Detector & Physics WG | Not started |
| 14 | Physics Generation Campaign 1 | 31/6/21 | Simulations WG | Not started |

# Summary

- June 2021 concept has been released

- Initial particle productions have been launched at all sites

- First sets of data are on S3

- Feel free to copy the evaluator files out of S3 storage to local machines
  `mcs3 cp <file or path> <output path>`

- There will be a workshop on July 8th to discuss data access along with detector and physics goals for ECCE

- PWGs are relaying their requests, June 2021 concept will have several hundred million events to validate detector concept

- Next detector concept foreseen for end of July
  (July 2021 concept, final large simulation campaign)