ECCE Simulations

Status Report
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06/30/2021
Software and Computing 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. 5M high q^2 events from SIDIS PWG from Jlab

- 1, 2, and 4 are in S3 storage
- Christoph was running initial tests on 3 (i.e. low stat production)

Production setup and location

- Macros branch and tag: master, 5f210c7 (June 23rd 2021)

- ECCE build: ana.14 (single particle is "new" but corresponds to ana.14)

- 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
  - Eval. can be run in separate jobs
  - Files will be written to <outputPath>/eval_xxxxx where xxxxx is the revision number
  - New revision is made each time the eval. macro is run AND the previous folder has any eval. files from that DST

Checking condor logs

- Single electron production at BNL

- 1000 events per DST

- I suspect the run time of 0 is failed jobs (I got some warnings of "Disk quota exceeded")

- 100 min = 6s/event, 400 min = 24s/event
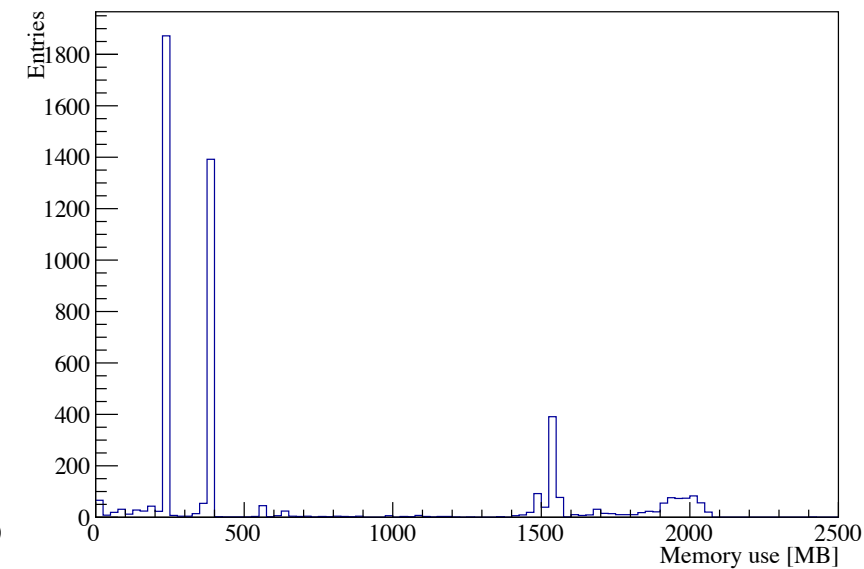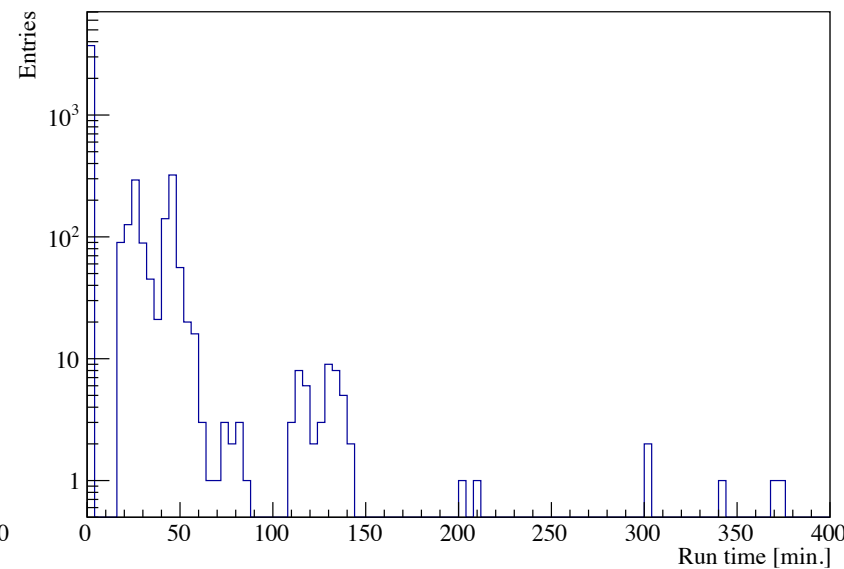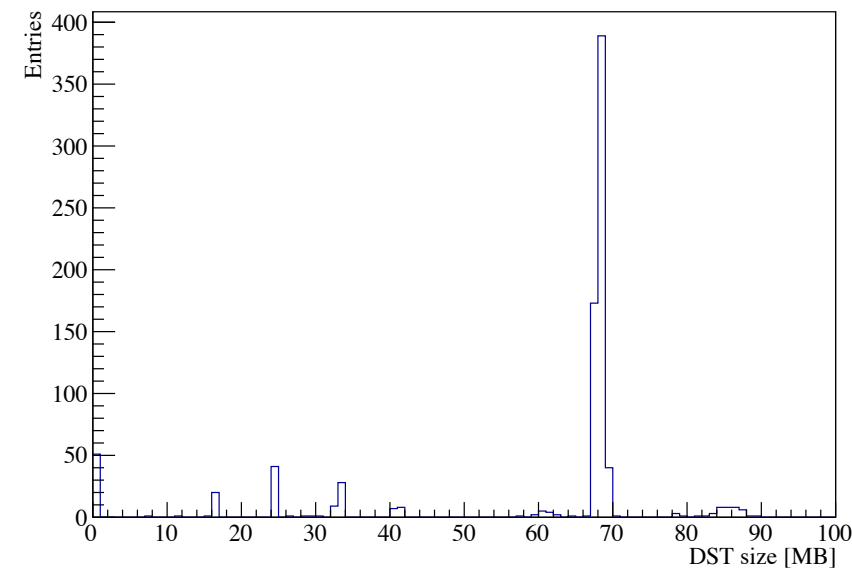
Checking condor logs
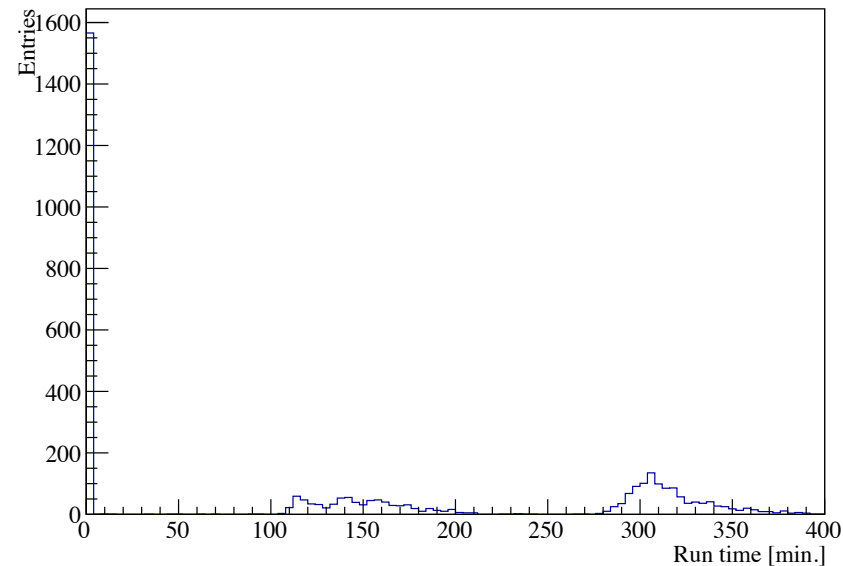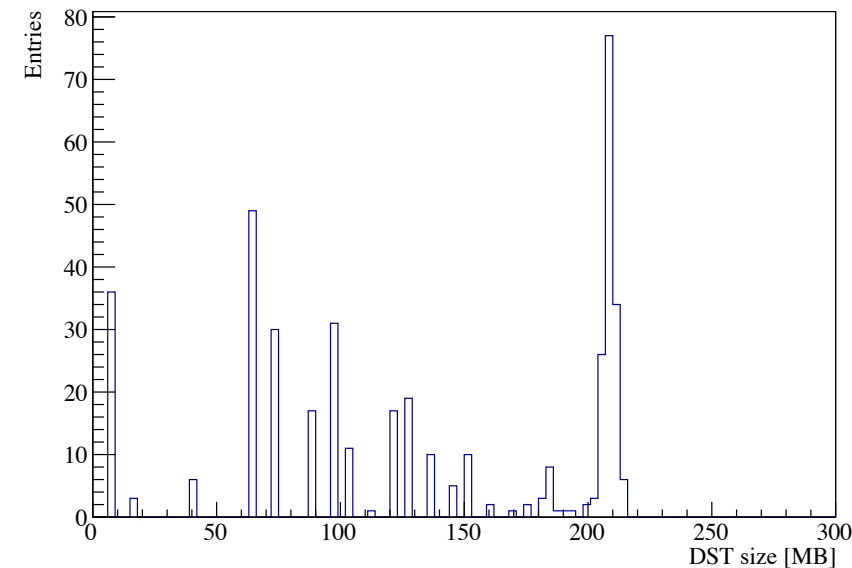
- Single pion production at BNL

- 1000 events per DST

- I suspect the run time of 0 is failed jobs (I got some warnings of "Disk quota exceeded")

- 100 min = 6s/event, 400 min = 24s/event
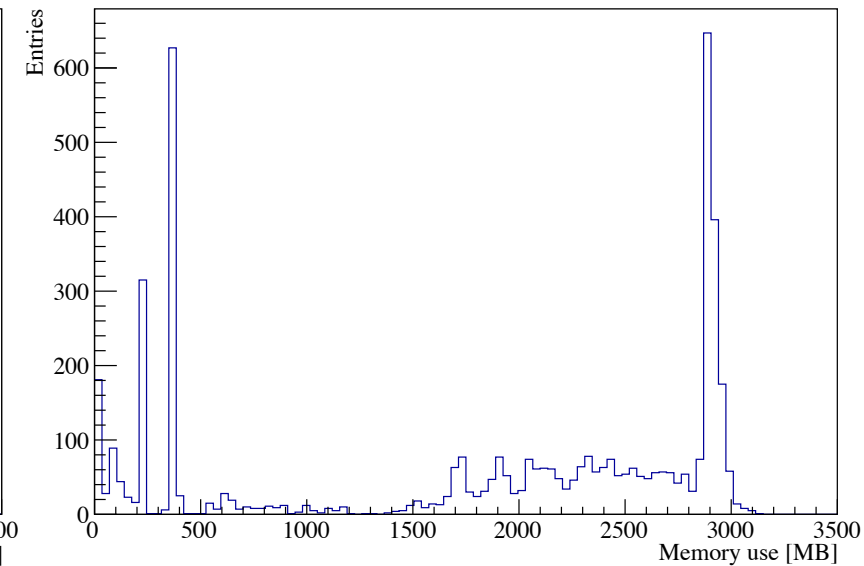
Timeline

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

PWG Requests

PWG	Process	Generator	Beam Parameters	No. Events Requested	No. Events In Storage	Notes
Diff. & Tag.	Meson Structure	DEMP		2M	0	There are 8 configurations here?
Diff. & Tag.	Neutron Spin			< 1M	0	
Diff. & Tag.	Coherent	BeAGLE		1.4M	0	There are 2 configurations here?
Exclusive	DVCS ep	MILOU3D		expect ~1M/config	0	Expect lowest and highest energy configs
Exclusive	DVCS pi0	Root files from YR converted to correct format to be passed through EICSmear		?	0	Expect lowest and highest energy configs
Exclusive	DVCS eHe	TOPEG		1M/config	0	Expect lowest and highest energy configs
Exclusive	DVMP on proton (J/Psi for 1st study)	lAger		?	0	Expect lowest and highest energy configs
Exclusive	DVMP on proton (several mesons in 1st study) and BH	DEEPSim (VT)		?	0	Expect lowest and highest energy configs
Exclusive	DVMP eA (starting with phi production and gold)	Sartre		?	0	Expect lowest and highest energy configs
Exclusive	TCS	expect events from external generator compatible with EICSmear/Fun4All (don't know name yet)		?	0	Expect lowest and highest energy configs
HF & Jets	HF	Pythia8		100M	0	Separate c-cbar and b-bbar productions of 100M
HF & Jets	Jets				0	
Inclusive (high Q2)	Neutral	Djangoh	18x275 ep	3.5M	0	1M Q2>2; 1M Q2>10; 1M Q2>100; 0.5M Q2>1000
Inclusive (high Q2)	Neutral	Djangoh	10x100 ep	2.6M	0	1M Q2>2; 1M Q2>10; 0.5M Q2>100; 0.1M Q2>1000
Inclusive+Electroweak	Neutral	Djangoh	varies	30M	0	2 * 15 beam conditions (9 ep, 6 eD)
Inclusive+Electroweak	Charged	Djangoh	18x275 ep	10M	0	
Electroweak	Charged	LQGENEP (Leptoquark)	18x275 ep	2M	0	Jinlong knows how to pass events from LQGENEP to EICsmear
SIDIS	(SI)DIS	Pythia6	18x100	2.5M	0	(1<Q2<100), Input files are part of test production
SIDIS	(SI)DIS	Pythia6	18x275	2.5M	0	(1<Q2<100), Input files are part of test production
SIDIS	(SI)DIS	Pythia6	5x41	2.5M	0	(1<Q2<100), Input files are part of test production
SIDIS	(SI)DIS	Pythia6	10x100	2.5M	0	(1<Q2<100), Input files are part of test production
SIDIS	(SI)DIS	Pythia6	18x100	2.5M	0	(Q2>100), Input files are part of test production
SIDIS	(SI)DIS	Pythia6	18x275	2.5M	0	(Q2>100), Input files are part of test production
SIDIS	(SI)DIS	Pythia6	5x41	2.5M	0	(Q2>100), Input files are part of test production
SIDIS	(SI)DIS	Pythia6	10x100	2.5M	0	(Q2>100), Input files are part of test production

https://wiki.bnl.gov/eicug/index.php/ECCE_Simulations_Working_Group#Full_Production

Summary

- June 2021 concept has been released

- Initial particle productions have been launched at all sites

- First sets of data are on S3

- Detector and Physics WGs have been pointed to these files to start checking the output