

Mock data status

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Progress

- Primary generators and SLIC are running; readout and recon scripts are tested
- Scripts, parameters, data locations:
`https://confluence.slac.stanford.edu/display/hpsg/Finding+Monte+Carlo+data+at+JLab`

CPU and storage

- Units of 5×10^5 beam bunches (1 ms background or 1000 trigger tridents; 13 background triggers or 200 trident triggers)
- Primary generators and SLIC dominate compute; SLIC dominates storage but can be deleted after readout

Sample	Time (min)	Size (MB)
EGS5 (oversample x100)	2.5	7
G4 hadrons	3.5	0.07
Background tridents	60	0.4
Trigger tridents	12	0.15
SLIC	60	1200
Readout	7	<6 kB/trigger
Recon	<1 sec/trigger	depends

Data

- 1 million background triggers (about 1 minute of beam)
- Three mock samples, 1 week each of trident triggers mixed with secret signal: one no-signal, one bump-hunt, one vertexing
 - ▶ Ask someone outside of analysis group to generate secret parameters: Rouven, Philip, Natalia?
- To avoid running SLIC on the same background four times, overlay beam background SLIC output with trident SLIC output
 - ▶ LCIO merge tools exist in hps-java, LCIO Java libraries and LCIO C++ libraries, but none are quite right, need to modify — Matt, Jeremy?
- Batch farm now running primary generators and SLIC for beam background
 - ▶ 2 weeks for 1 million background triggers, then keep going — use all the CPU time we can get

Problem: making enough mock data

- Current trigger trident generator's cross-section is $135.8 \mu b$ (5 kHz): 10 months to simulate 1 week of triggers
- How to reduce that to 1 month?
 - ▶ Simulate less background per trigger trident: factor of 2 at most (500 \rightarrow 250 pileup bunches)
 - ▶ Cut out trigger tridents that won't trigger (cuts in MG or after SLIC): factor of 5 at most (current generator triggers 20% of the time)
 - ▶ Cut out triggers that won't pass event selection using cuts in MG
 - ▶ Use the same background multiple times

Geometry, trigger, etc.

- New detector: HPS-Proposal2014-v6 (changes are still possible, nobody else use this yet)
 - ▶ Fixes some SLIC crashes; no significant physical changes from v5
- Still time to change readout/trigger sim
 - ▶ FADC trigger integration and resolution are in, have always been
 - ▶ Gain, thresholds, clustering, hit pattern info, trigger cut improvements?
 - ▶ If you're planning changes, let me know!
- Dead channels? SVT and ECal groups should decide what to put in
- Recon, DST: I'll run standard recon and DST, debugging those is not my problem