

Event Processing Rates

October 20, 2016 DL

git revision #f817b38

hd_rawdata_011667_135.evio

EVIO:NTHREADS=16 (parser)

ifarm1401

Intel(R) Xeon(R) CPU E5-2670 v3 @ 2.30GHz

$$R = \frac{1}{T_{\text{serial}} + \frac{1}{N_e} T_{\text{para}}}$$

$$N_e = N_{\text{thr}} - (1-\alpha)(N_{\text{thr}} - N_{\text{core}})(N_{\text{thr}} > N_{\text{core}})$$

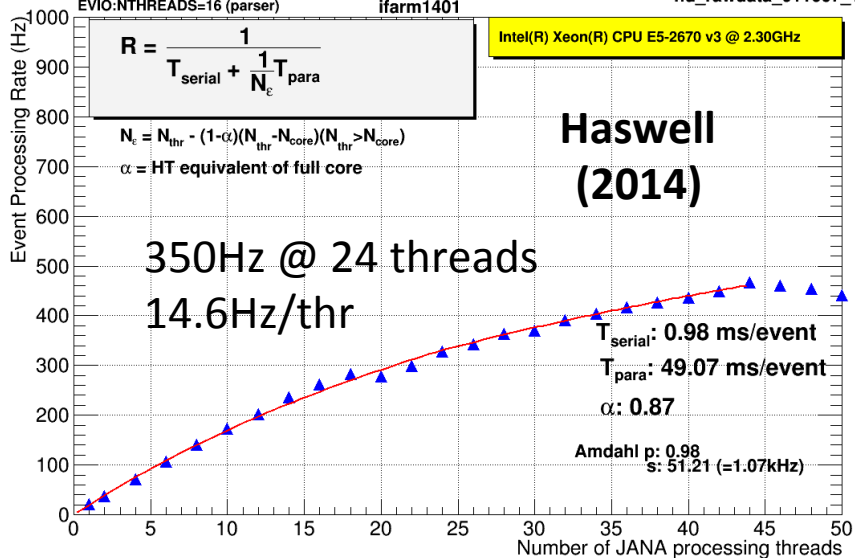
α = HT equivalent of full core

**Haswell
(2014)**

350Hz @ 24 threads
14.6Hz/thr

T_{serial} : 0.98 ms/event
 T_{para} : 49.07 ms/event
 α : 0.87

Amdahl p: 0.98
s: 51.21 (=1.07kHz)



Event Processing Rates

October 5, 2016 DL

git revision #9ed7512

hd_rawdata_011667_135.evio

EVIO:NTHREADS=16 (parser)

gluon112.jlab.org

Intel(R) Xeon(R) CPU E5-2697 v4 @ 2.30GHz

$$R = \frac{1}{T_{\text{serial}} + \frac{1}{N_e} T_{\text{para}}}$$

$$N_e = N_{\text{thr}} - (1-\alpha)(N_{\text{thr}} - N_{\text{core}})(N_{\text{thr}} > N_{\text{core}})$$

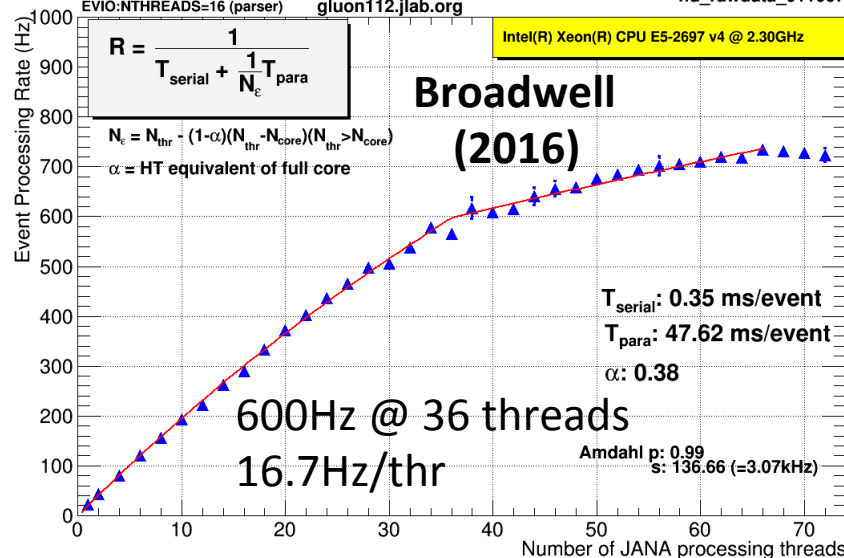
α = HT equivalent of full core

**Broadwell
(2016)**

600Hz @ 36 threads
16.7Hz/thr

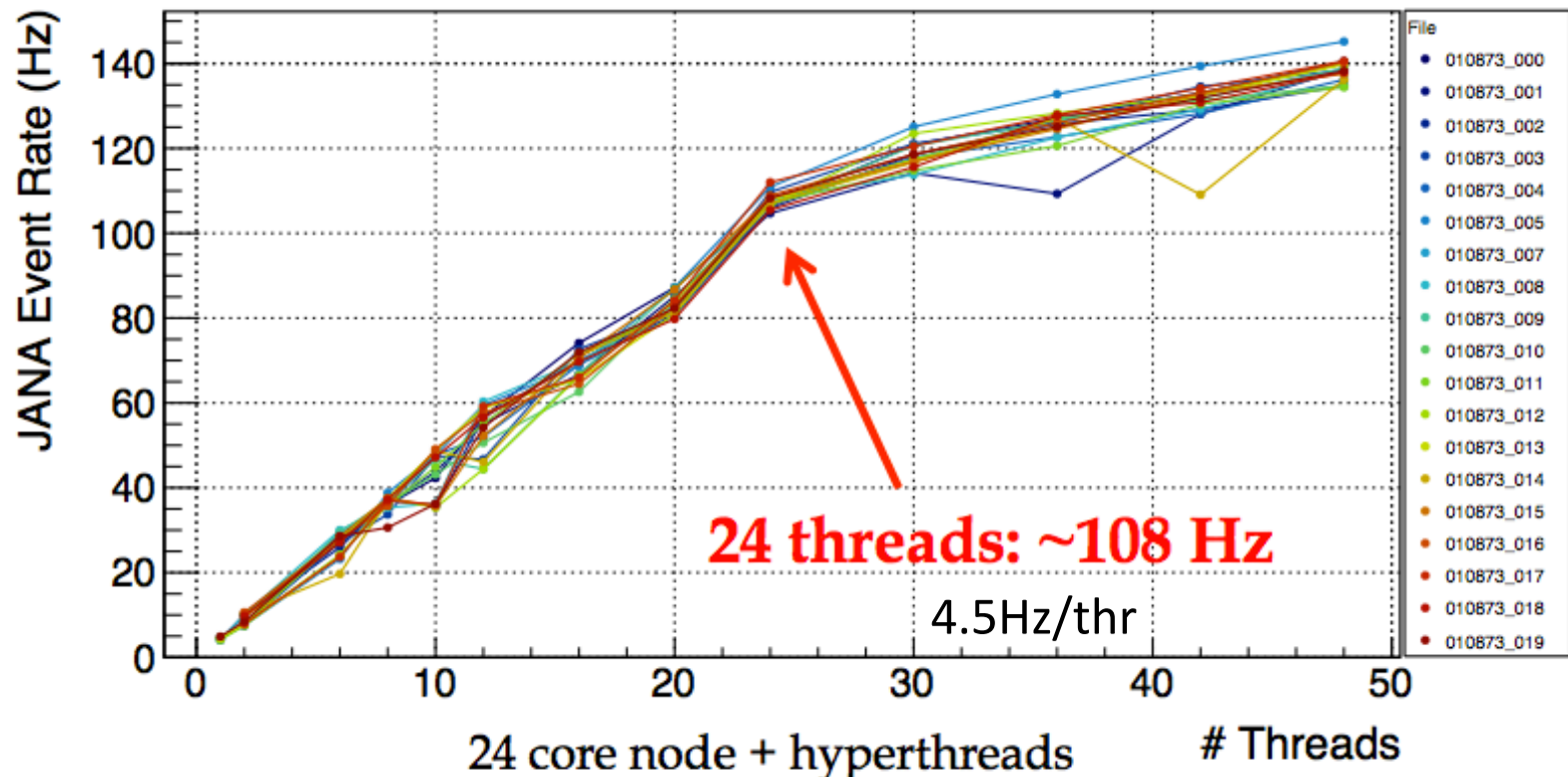
T_{serial} : 0.35 ms/event
 T_{para} : 47.62 ms/event
 α : 0.38

Amdahl p: 0.99
s: 136.66 (=3.07kHz)



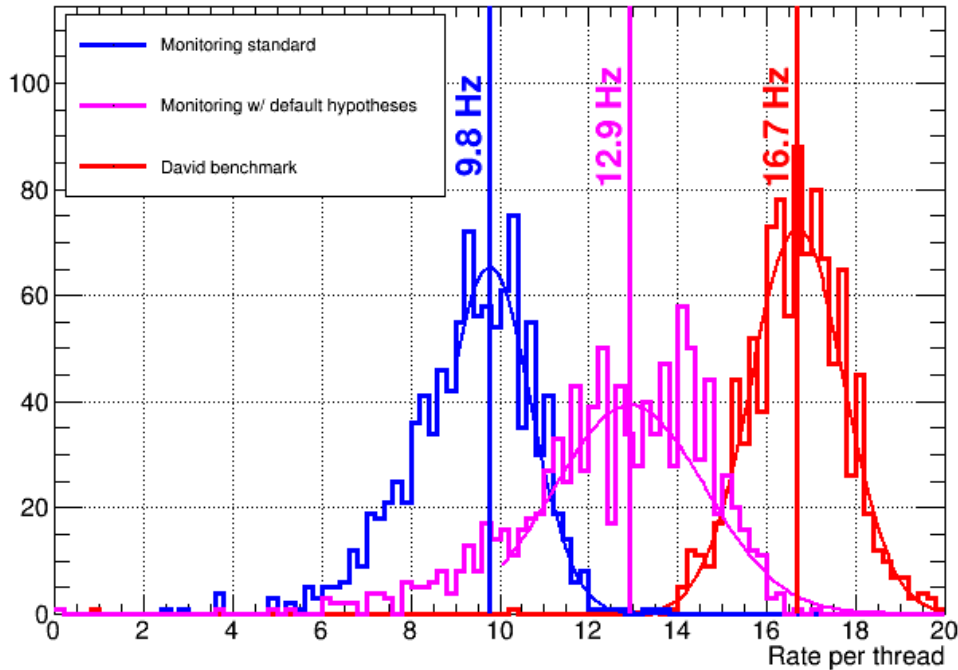
Reconstruction Rate

- * Issues with multi-threaded scaling: 24 threads: 5x scaling 24 Hz
- * Fixed how locking was handled: 24 threads: 108 Hz, 23x scaling



GlueX reconstruction rate/thread

October 31, 2016 DL
git revision #63c9270
hd_rawdata_011667_135.evio



PLUGINS

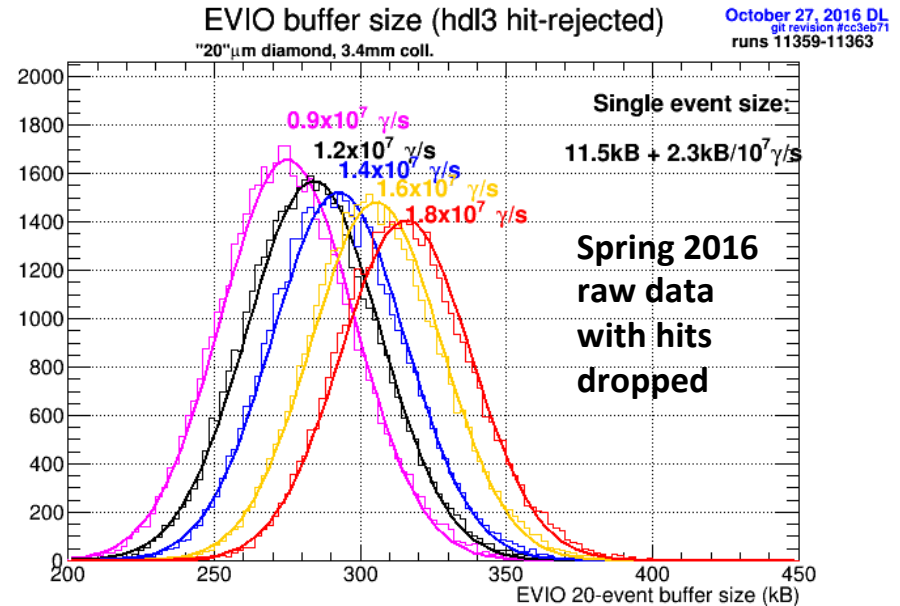
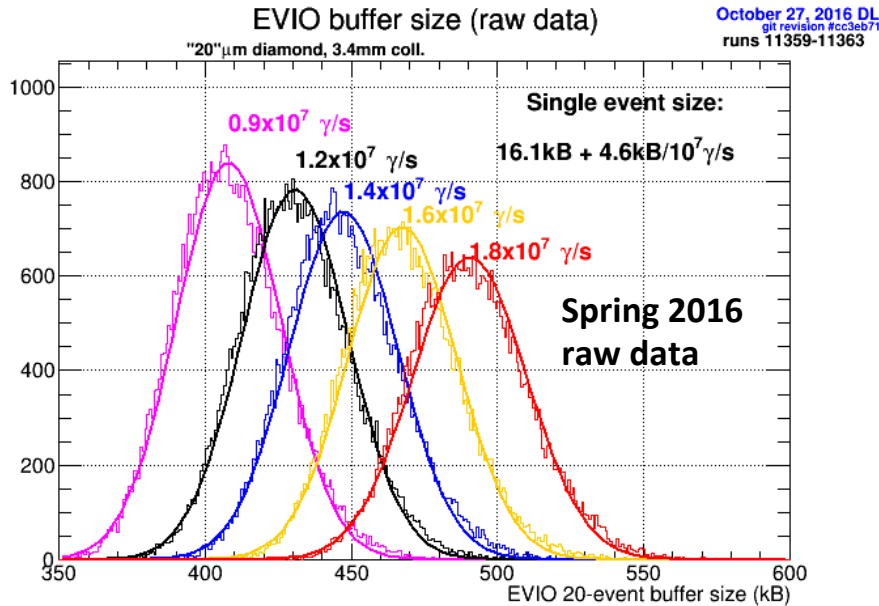
janadot,danarest,monitoring_hists,track_skimmer,occupancy_online,EPIC_S_dump,TS_scaler,TRIG_online,L1_online,PSPair_online,BCAL_inv_mass,FCAL_invmass,BCAL_Hadronic_Eff,CDC_Efficiency,FCAL_Hadronic_Eff,FDC_Efficiency,SC_Eff,TOF_calib,TOF_Eff,trackeff_missing,evio_writer,trigger_skims,bigevents_skim,p2pi_hists,p3pi_hists,p4pi_hists,p2k_hists

JANA_CALIB_CONTEXT variation=default calibtime=2016-09-02-14-42-00

#calibtime=YYYY-MM-DD-hh-mm-ss (hr is 24-hr format)

TRKFIT:HYPOTHESES 2,3,8,9,11,12,14,15 #GEANT PIDs for tracking: Add e+/- & pbar

Event Size vs. Beam Current



$E_e = 12.113\text{GeV}$
20μm diamond
3.4mm collimator
200nA = 0.93x10⁷ γ/s

Event Size: ~14kB (low intensity)

extrapolate to $I_{\text{beam}} = 0 \rightarrow 11.5\text{kB/event}$
(size of clean event with no accidentals)

Accidental data fraction (by volume):

$$\frac{(0.01\text{kB/nA})(I_{\text{beam}} \text{ nA})}{(0.01\text{kB/nA})(I_{\text{beam}} \text{ nA}) + (11.7\text{kB})}$$

0.9 γ/s: 15% of data is due to accidentals

1.8 γ/s: 26% of data is due to accidentals

5.0 γ/s: 50% of data is due to accidentals