



# Data Processing Status Update

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# Bucket 7 Status

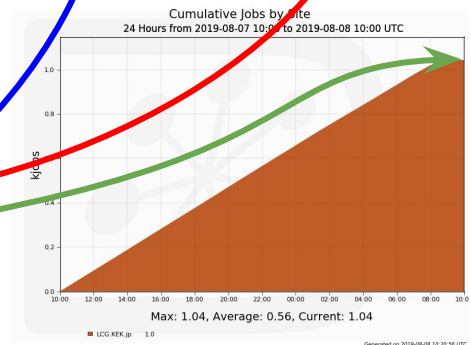
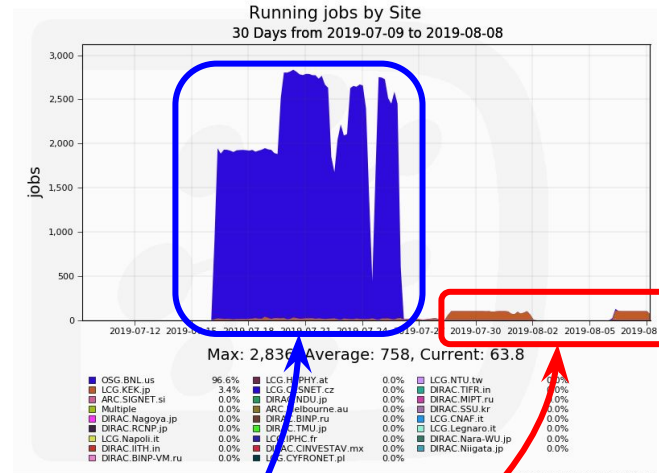


- Production of mdst/cdst for hlt\_skim for bucket 7 started yesterday (7th Aug)
  - <https://agira.desy.de/browse/BIIDP-1643>
  - Release-03-02-04
  - **GT: online + data\_reprocessing\_prompt\_bucket7**
- **Status:**
  - **359** runs
  - **10434** jobs total
  - Moved: **3331** (~33%)
  - Pending: **6673**
  - Running: 400
    - We got 1500 job slots on **b2\_prod** before KEKCC shutdown: negotiating with Hara-san to have them also now
  - ETA: with current 400 job slots: 2 more days
- **Output path:**
  - **/group/belle2/dataprod/Data/release-03-02-04/DB00000677/bucket7/e0008**

# Proc 9 on Grid: Status



- Very little progress since last DP meeting!
  - <https://agira.desy.de/browse/BIIDP-1587>
- Up to Yesterday:
  - ProdID: 8530, 8525, 8522 (exp3 physics, exp3 beam, exp 7)
    - RawProcessing 100% Done
    - Merging in progress:
      - **785/166/1512 jobs waiting**
  - ProdID 8521 (exp 8)
    - RawProcessing still NOT done:
      - 46076 jobs Waiting (125 running and 173 OnDDM)
      - Checked some and they are queued at KEKCC
        - "Waiting Pilot Agent Submission" at LCG.KEK.jp
      - Currently only ~100 jobs run in parallel at KEK
      - ~1000 jobs /day
- Processing at BNL finished by 25th July.

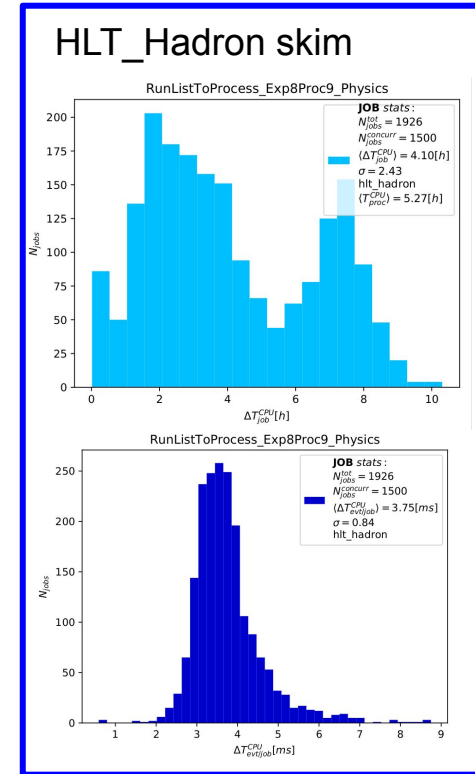


**If we had only grid production for proc9, we would had NO results for EPS/LP**

# Estimate cdst production at KEKCC



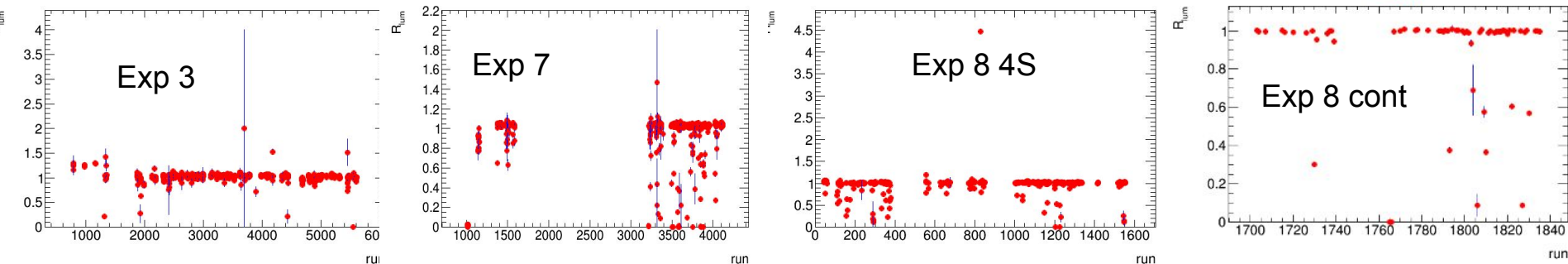
- Based on experience on exp8 Proc8 hlt skim processing
  - HLT hadron / gamma-gamma / bhabha / mumu
  - $\langle \Delta t (\text{job}) \rangle \sim 4.1 / 1.23 / 2.40 / 1.34 \text{ h}$
  - $\langle \Delta t (\text{event}) \rangle \sim 3.75 / 2.13 / 2.33 / 3.22 \text{ ms}$
- So, on average, on a single CPU:
  - $\langle \Delta t (\text{job}) \rangle \sim 2.3 \text{ h}$
  - $\langle \Delta t (\text{event}) \rangle \sim 2.85 \text{ ms}$
- Exp 8 proc9 in numbers:
  - IntL  $\sim 2.8 / \text{fb}$
  - Runs N = 463:
  - Jobs N = 13,418 (114k for all events reconstruction)
- $\sim 4700 \# \text{jobs} / \text{fb}^{-1} \Rightarrow 11,000 \text{ h}_{\text{CPU}} / \text{fb}^{-1}$ 
  - With 400/1000/1500/2000 job slots:
  - 1.2 / 0.5 / 0.3 / 0.23 day /  $\text{fb}^{-1}$
- Extrapolating to Fall run:  $14 \text{ fb}^{-1} (*) \Rightarrow 17 / 7 / 4.2 / 3.2 \text{ days for cdst processing}$ 
  - (\*) Morita-san slides at June B2GM



# Luminosity Issues



- Reported by Xing-Yu Zhou <https://agira.desy.de/browse/BIIDP-1734>
- **Some runs show a big difference between online and offline integrated luminosity**



Preliminary investigation on exp8 continuum runs with strange online/offline lumi ratio shows that numbers of events reported by elog (online) is substantially lower than that copied to offline (and processed)

- Investigating

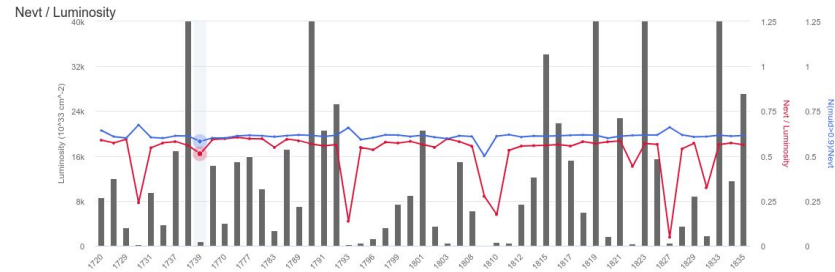
# Investigating



Preliminary investigation on exp8 continuum runs with strange online/offline lumi ratio shows that numbers of events reported by elog (online) is substantially lower than that copied to offline (and processed)

| Run  | Online #ev | Offline #ev | Online L /nb | Offline L /nb |
|------|------------|-------------|--------------|---------------|
| 1730 | 91271      | 44309       | 300.4        | 90.6          |
| 1793 | 144846     | 64673       | 277.9        | 104.6         |
| 1804 | 3042       | 2026        | 6.1          | 4.2           |
| 1806 | -99        | 461         | 3.4          | 0.3           |
| 1809 | 58052      | 36407       | 109.0        | 62.1          |
| 1810 | 215107     | 137237      | 621          | 227           |
| 1822 | 127413     | 118884      | 343          | 207           |
| 1827 | 330028     | 30504       | 527          | 45            |
| 1830 | -99        | 30504       | 1868         | 1065          |

Something strange seen also on MiraBelle for these runs



- Got # events on/off line for all runs (elog/offline copy).
  - Will compare in details.
- Asked Hara-san if he see something strange in sroot->root processing and copy.
- Keep investigating

# Luminosity Projection

## ASSUMPTIONS

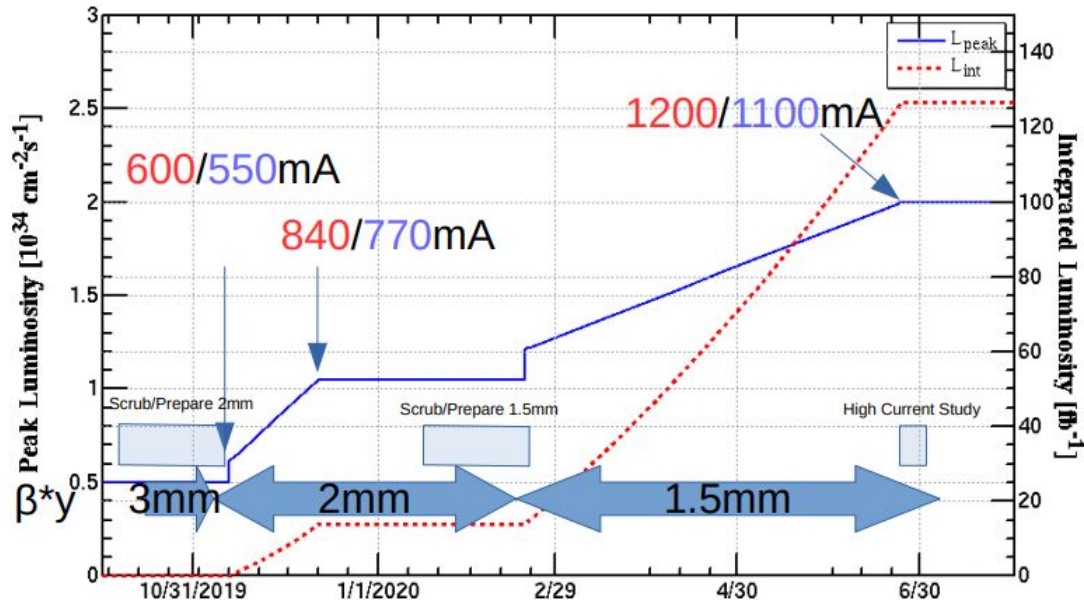
(*risky* ↔ *realistic*)

- Integral Efficiency (~65%)
  - Integration Time Efficiency ~90%
    - 8H maintenance & 4H startup / 2weeks
    - 12H linac study / week
  - SuperKEKB Availability 85%
  - Belle2 Availability 85%
    - Availability @ 2019-06-02 is 89.6%.
- Luminosity Performance
  - Baseline:  $0.5 \times 10^{34}$  @ 600/550mA ( $n_b=1576$ ,  $\beta^*y=3\text{mm}$ )
  - No beam-beam parameter improvement
  - $\beta^*y$  staging: 2mm @ 2019-11 → 1.5mm @ 2020-02
  - Improvement by squeezing  $\beta^*y$ :  $1/\sqrt{\beta^*y} \rightarrow 1/\beta^*y$  during operation period
    - Assuming detector background independence with  $\beta^*y$ .
  - Beam current limit improvement:  $\times\sqrt{2}$  @ 2019-12-12 →  $\times 2$  @ 2020-06-24
    - Assuming factor 2 improvement of CDC current limit until next summer.
    - Assuming no current limit for protecting detector.
- Machine Study
  - No future beam development time is counted.

Integral Luminosity

$13.9 \text{ fb}^{-1}$  (2019-10 ~ 2019-12)

$112.8 \text{ fb}^{-1}$  (2020-01 ~ 2020-07)



From Morita-san slides at B2GM