

Mu2e-doc-34190-v2



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Mu2e Computing Status

Rob Kutschke, SCD
SCD Projects Meeting
July 2, 2020

Recent News

- DOE Review of Preliminary Experiment Operations Plan
 - Zoom review: May 5 and 6
 - Still waiting for final report
- Mu2e Collaboration Meeting: June 15-22 (zoom only)
 - Nothing special to report for computing
- Pileup model using event mixing greatly improved.
 - Now < 3 GB peak RSS (was 8 GB).
 - First small production this weekend.

Recent News

- Used all of our allocation on ANL HPC last quarter
 - Discovered new G4MT issue on KNL
 - Related to management of random numbers
 - Affected ~20% of the first round of jobs.
 - Successful work-around was to use single threaded G4 on Haswell nodes on BeBop, not THETA.
 - Lisa has investigated
 - Meeting at 3:00 PM today to discuss her proposed solution

Recent News

- Upgraded to Geant4 v4_10_6_p02a
 - No new issues (memory still an issue since 10_6_p01).
 - Mostly a bug fix release; timing is convenient.
- Will move to art v3_06_00 as soon as it is available
 - Expected next week.
 - Includes several feature requests from Mu2e.
- Pileup model using event mixing greatly improved.
 - Now < 3 GB peak RSS fo up to 8x nominal pulse intensity
 - Was 8 GB limited to 3x nominal pulse intensity.
 - First small production this weekend.
 - Will see if this also mitigates the disk contention issues.
 - One more step planned to address this.

Upcoming Work

- MDC2020 Simulation campaign (fall) will be driven by POMS
 - Preparations well underway
 - POMS is a candidate to manage most of our production workflows.
 - I expect we will need discussions with POMS team and perhaps will have some feature requests.
- Offline DQM
 - We understand that SCD is supporting the use of graphana/elasticDB/kibana for DUNE DQM
 - Mu2e would like to do the same
 - Preliminary discussions between Kevin Retzke and Ray Culbertson

Upcoming Computing Resource Peaks

- Summer: O(1 Mhour) for marsmu2e radiation safety study
 - Planned for Fermigrid only.
- Late summer and into early calendar 2021:
 - Mock Data Challenge to exercise calibration and alignment
 - Update estimates of physics sensitivity and of backgrounds
 - Planning the two efforts to minimize repeated work
 - CPU estimates in preparation but likely to stay within our FCRSG integral Fermigrid requests for FY2021 and 22.
 - Can run most, maybe all jobs on OSG.
 - Simulations can be run on KNL HPC if available.

Nothing new this month

Upcoming Work

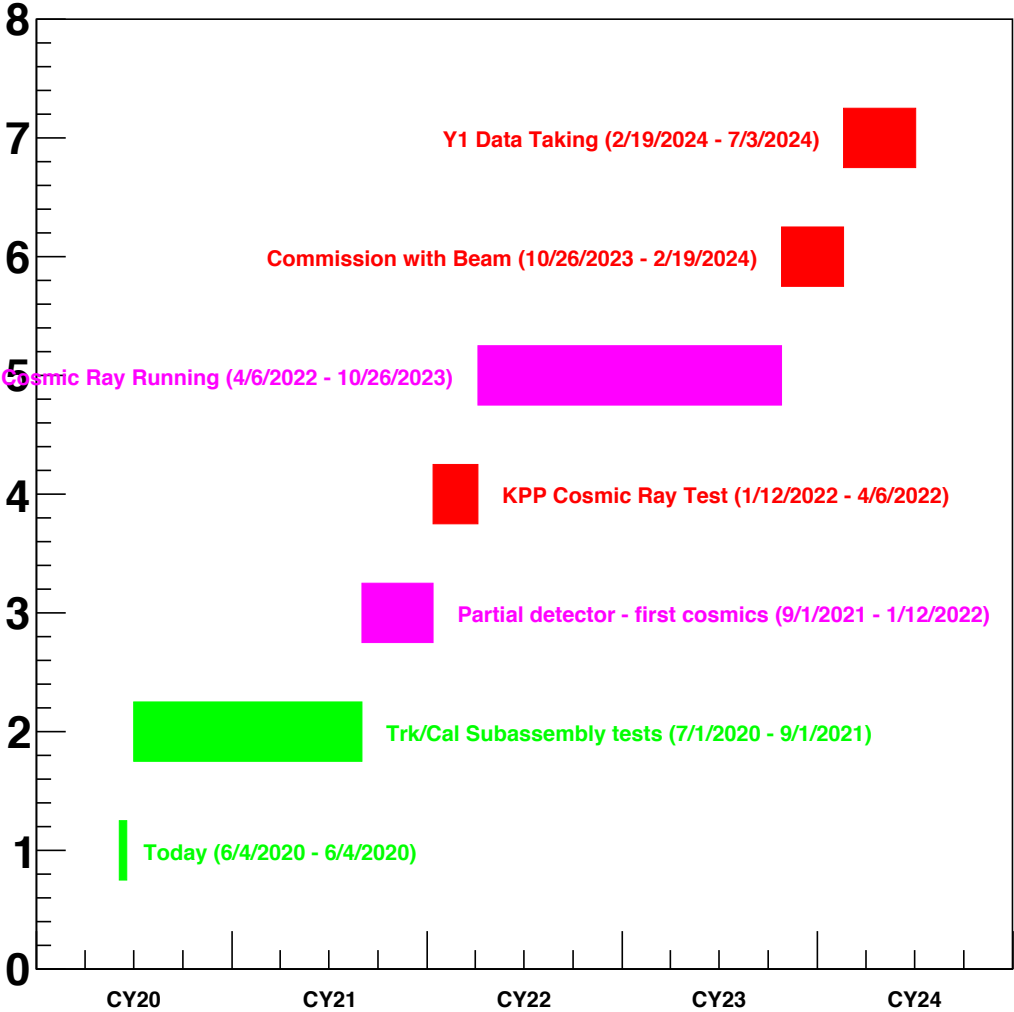
- I just learned:
 - RUCIO and MetaDB are already being used by DUNE
 - Data Injest is being spec'ed
- We are interested.

A Concern Expressed Last Month:

- Is this in scope for this meeting?
 - “too many hops” issue with mail distributed by listserv is an increasing problem.
 - Thanks to CCD for mitigation done for the Snowmass organizers list
 - Is there a plan to mitigate more broadly?

Thanks: someone is now looking into this

Pre-Covid Rough Schedule - provided for reference



- Takeaways:
- First cosmic rays: fall 2021
- First beam: fall 2023
- First physics data Feb 2024

Backup Slides

Concerns from last month – still open

- Even with our low level of recent activity we have regular failures due to dCache overload.
 - Happens a few time per month.
 - How will this affect data taking?
 - Can we get a “data taking” pool and use it for other purposes in order to measure if these issues also affect data taking pools?

Computing Related Working Groups

- Trigger and DAQ
 - Rivera (SCD Project L2), Echenard (Caltech, Coordinator)
 - Other SCD: Flumerfelt
- Computing and Software
 - Co-Coordiators: Kutschke (SCD), Brown (LBL)
- Simulations
 - Co-coordinators: Murat (PPD) and Di Falco (INFN Pisa)

Trigger and DAQ

- Next major step is integrating CRV data with the Tracker and Calorimeter data.
 - CRV team recently completed code to define the raw data format and populated it from simulated events.
- A lot of recent work planning the online/offline handoff with Computing (Kutschke) and Mu2e Ops Management (Rakness).

Computing and Software

- Algorithm Development
 - Trigger, Reco, Calibration, Alignment, DigiSim
 - Cosmic and Beam
 - Mock Data Challenge later this year with focus on Calibration/Alignment.
- Acquire/Configure/Build workflows for Operations
 - Data logging; data processing; DQM
 - Goal is to maximize use of common services.
 - Expect discussions with SCD over the summer
- Infrastructure improvements
 - Last good time for breaking changes in many things is this summer.

Simulations

- Update physics sensitivity and background estimates
 - Many elements in common with Mock Data Challenge.
 - Will coordinate to avoid duplication of effort.
- Validate latest shielding plan (descoped for cost reasons)
 - Radiation safety study (marsmu2e)
 - Performance of CRV (mostly THETA at ANL)