

Production and Sti plans ...

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STAR Analysis Meeting
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Production history

- ◆ Year4 production done so far ...
 - ◆ Not too much
 - ◆ We waited (until October 28th 2004, see S&C meeting notes) and ...
 - ◆ Decided to proceed with TPT+EST (**ongoing and NOT stopping**)
 - ◆ Careful inspection of ITTF / Sti revealed a few fundamental problems not seen prior (MCS treatment, beam pipe material, wrong track length, points outside TPC volume, hits off tracks, missing SSD material, ...)
- ◆ It was *un-safe* to proceed with Sti as planned
 - ◆ Interestingly, d+Au evaluation DID NOT show ANY major discrepancies
 - ◆ Still puzzled about that ...
 - ◆ globals vs primaries (??), low density

Production direction change

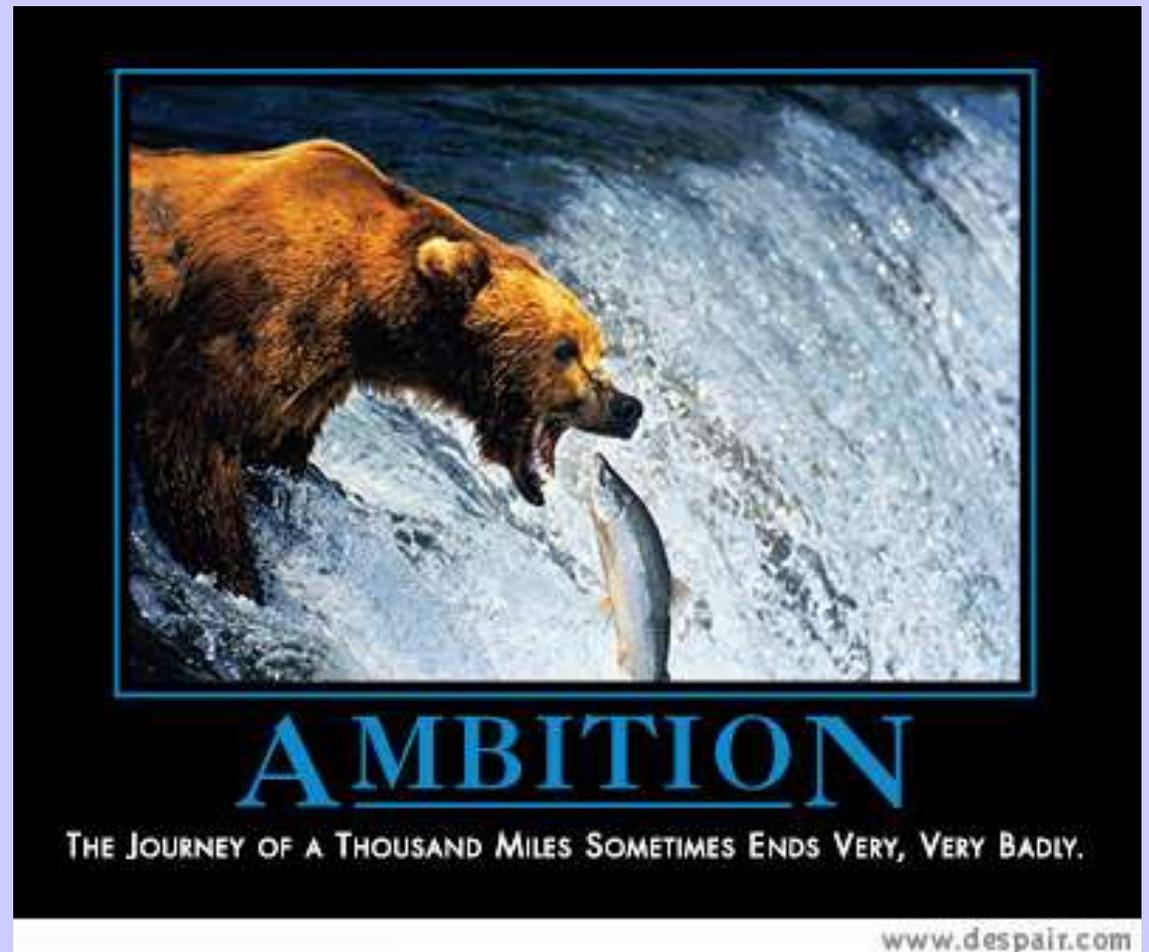
- ◆ **Sti project changed direction**
 - ◆ **Claude's** knowledge remains a key to success
 - ◆ Core team (**Victor / Yuri**) fully allocated to helping with code check (in depth)
 - ◆ **Marco** volunteered to help with evaluation
 - ◆ Thanks ! Thanks ! Thanks ! Thanks ! Thanks ! Thanks !!
has been a tremendous help along with insightful comments and suggestions and clear understanding of the issue at hand
 - ◆ Manuel, Marcelo, Duncan, ...
- ◆ **Smaller team reviewing from top to bottom**
 - ◆ Seem like something we should have started with ...
 - ◆ ... but, here we are. Moving on.
- ◆ **High density: Zibi could tell me “I told you so” ...**
 - ◆ Made a (few) judgment call mistake ...

All and behold ...

- ◆ With d+Au evaluation, seemed like a long way ahead and boosted our ambitions and hopes ...

All and behold ...

- ◆ With d+Au evaluation, seemed like a long way ahead ... continuing in that direction seemed like ...



All and behold ...

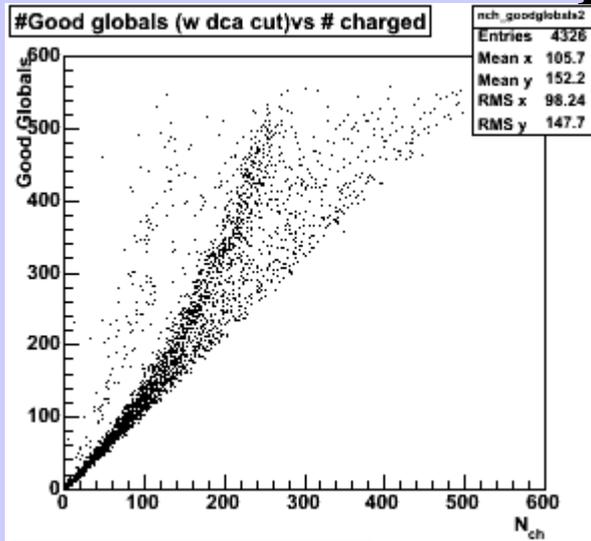
- ◆ With d+Au evaluation, seemed like a long way ahead and boosted our ambitions and hopes ..
- ◆ The current redirection forcing a top-to-bottom and inside out hand-on code review is what we needed
 - ◆ Maybe after all, we are “*lucky*” ...
 - ◆ ...
 - **This is THE RIGHT approach / the RIGHT Track !!!**
- ◆ In all cases, strategy was to NOT cut bridges with the old code & framework
 - **Allows for production to go ON as we speak !!!**

Status ...

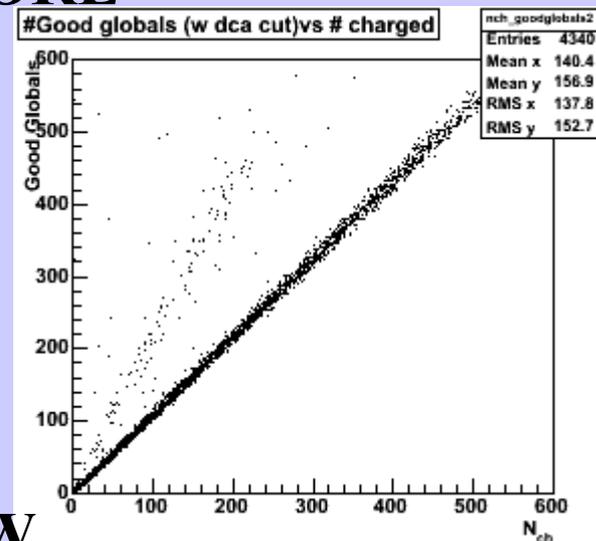
- ◆ Sti project status will be given by Claude
- ◆ Lot's of progress were made, Initial worrisome results ...

BEFORE

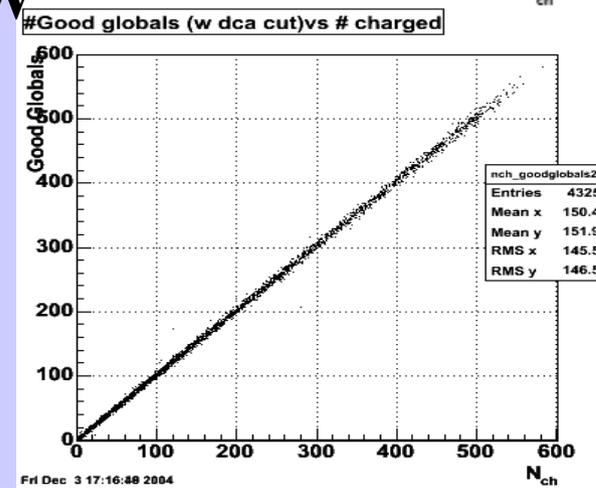
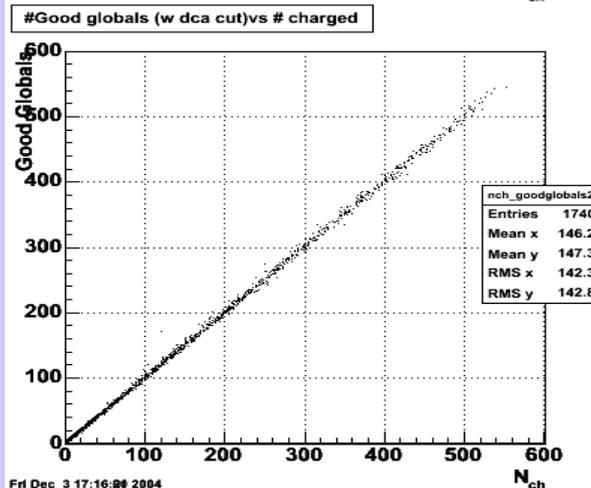
With SVT



Without SVT

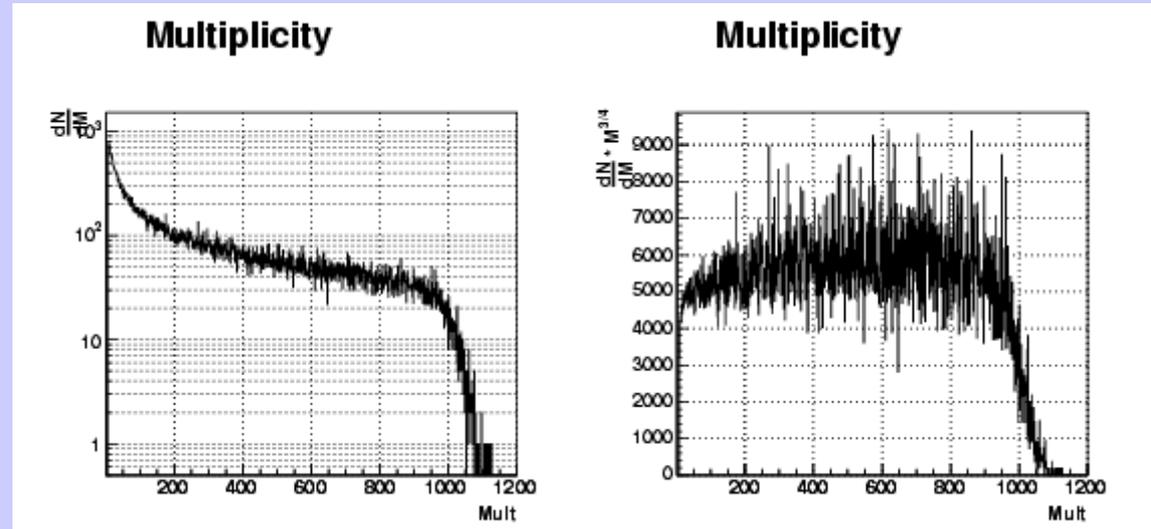
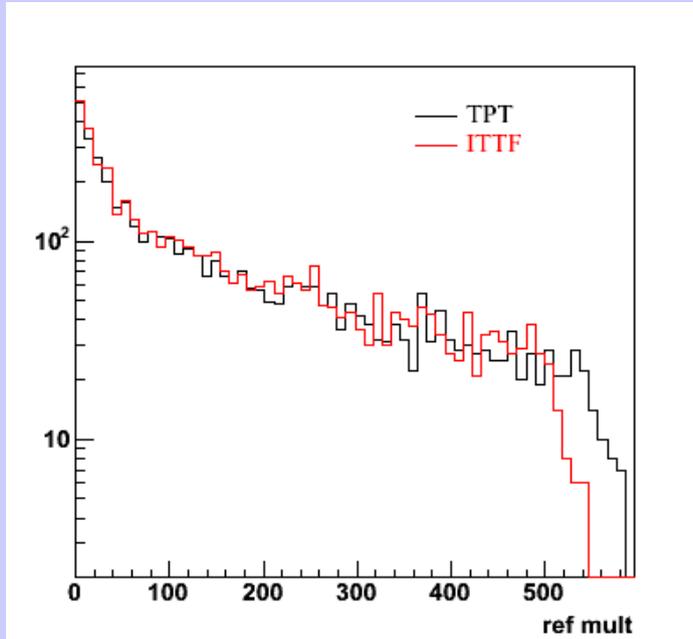


NOW

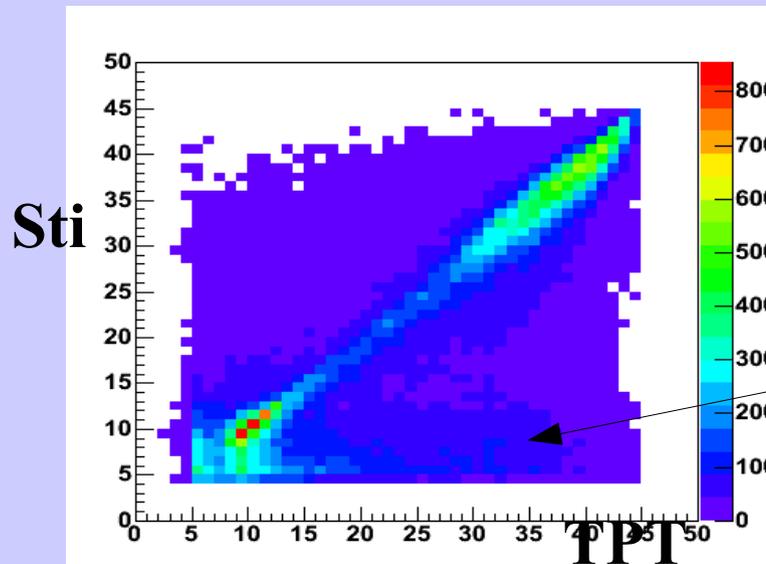


Remain some issues

- ◆ Still ... mult differs by $\sim 10\%$



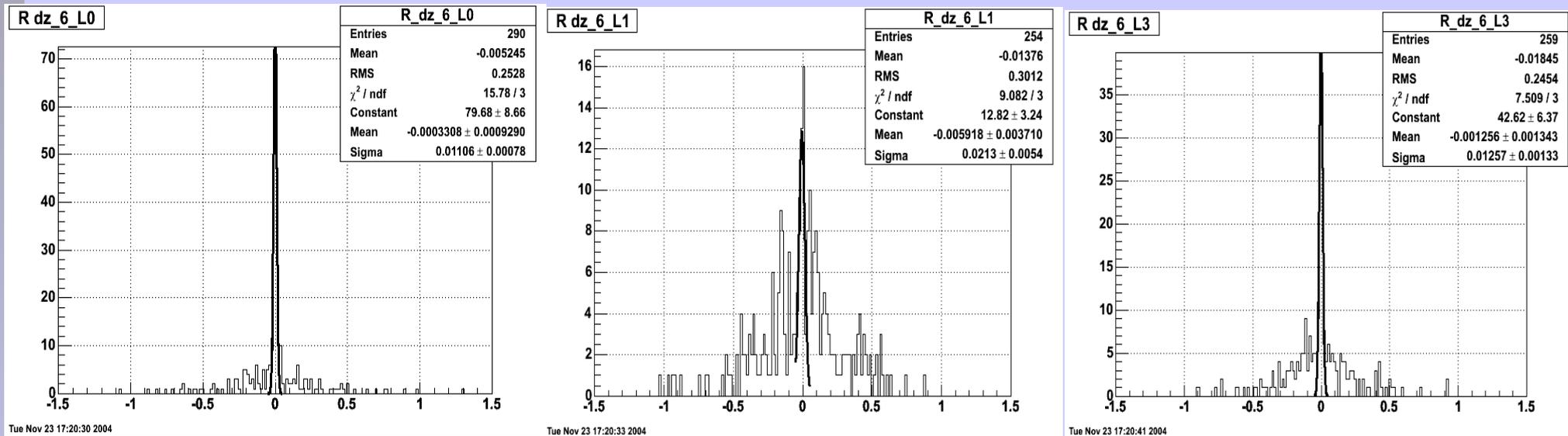
Lower upper limit when SVT is in (Duncan)



Do we understand this blob in the # fit point correlation ??

Do we understand residuals ??

- ◆ SVT residuals ?? A geometry issue ??
- ◆ Difference between Marcelo and Claude ??



**Would need more SVT expertise to understand this ...
Waiting for Sti geometry to be checked ...**

Where are we now ??

◆ There is still work to be done

- ◆ Lot's of progress were made, we need to understand and fix the remaining problems
 - ◆ TPC based tracking is believed achievable within weeks
 - ◆ Cannot make much progress without SVT expertise for the SVT part (**possible meeting today at noon ?**)

◆ Murky issues

- ◆ Do we have the right hit errors ?? Do we need (re)tuning ??
- ◆ When a track has 1 SVT hits, do we believe it is the right one ?? Shall we reject it ?? We saw Andrew's results (MC) ... is it reasonable to use such hit within an IT(TF)
- ◆ Tuning SVT based on what: MC based proved to be from un-satisfactory to leading to false-confidence (Hit errors)
- ◆ What do we do now ??
- ◆ What is our criteria for “goodness” ??

Where are we going ... targets !!

- ◆ My current approach to this - Pragmatism -
 - ◆ #1 : Production continues as it stands until in a position to do otherwise
 - ◆ Sti and production schedules no longer tied to one another
 - ◆ #2 : cut suspicious parts, sacrifice speed over clarity
 - ◆ If a formula / approximation is uncertain, replace by proper approach (matrix calculation with matrix package, approximations with Taylor expansion replaced by full formula etc ...) - Speed is secondary
 - ◆ #3 : use what you can when you can
 - ◆ Implement and have in place component rejections: if a ladder does not work, mask it off etc ...

Objectives / possible targets

◆ Objectives

- ◆ Sti **IS** at the core of our future
- ◆ Full tracking would have to work ... **and be evaluated by March 2nd**

- ◆ Would minimally allow tracker developments for the future

- ◆ Forward tracking
- ◆ FTPC-PMD tracking (Pawan Kumar)
- ◆ E-EMC / Spin convenient framework
 - ◆ Vertex finding (Jan Balewsky, Mike Miller?)
 - ◆ E-EMC (David Relya)

◆ Possible Target / opportunity

- ◆ Within 2 weeks, can we have Sti working ??
- ◆ Spin PWG would prefer this to happen (vertex)
- ◆ TPC or TPC+SVT as it stands by mid-December (15th)
 - ◆ Consistent with pragmatic approach, would need to start anyway
- ◆ To achieve target, would need
 - ◆ MC?, Au+Au, p+p comparisons

Objectives / targets

- ◆ March 2nd
 - ◆ Would need complete re-evaluation
 - ◆ Au+Au, p+p, MC
 - ◆ Would need to re-assess a few studies
 - ◆ HBT track splitting / merging
 - ◆ Duncan's fluctuation analysis ??
 - ◆ ...
 - ◆ So, Sti works (as we hope) and then what ??
 - ◆ Where would we be in the production scheme ??
 - ◆ Could samples be Sti based (like p+p for Spin) ??
- ◆ **A question for PWGC ...**
- ◆ **Our SOLE objective is to provide an answer and evaluation by that date**

But where are we with production ??

Not very far ...

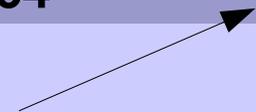
| Trigger | N events | N done | Events Remains | MB/evts | sec/event | Total days | Total month | Remains | |
|----------------------|-----------|----------|----------------|-------------------------------|------------------|------------|-------------|---------|--|
| production62GeV | 17865616 | 14913863 | 16.52 | 0.36 | 18.58 | 3841.93 | 128.06 | 21.16 | |
| ppMinBias | 2533111 | 1025860 | 59.50 | 0.64 | 5.33 | 156.27 | 5.21 | 3.1 | |
| ProductionPP | 13030789 | 5657189 | 56.59 | 0.41 | 14.90 | 2247.21 | 74.91 | 42.39 | |
| ProductionPPnoBarrel | 1640693 | 1715210 | -4.54 | 0.45 | 13.10 | 248.76 | 8.29 | 0 | |
| ProductionPPnoEndcap | 317372 | 319617 | -0.71 | 0.64 | 16.10 | 59.14 | 1.97 | 0 | |
| ProductionCentral | 734727 | 0 | 100.00 | 5.00 | 65.00 | 552.75 | 18.42 | 18.42 | |
| ProductionHalfHigh | 854044 | 316000 | 63.00 | 5.84 | 71.38 | 705.57 | 23.52 | 14.82 | |
| ProductionHalfLow | 7677264 | 3600000 | 53.11 | 1.27 | 54.61 | 4852.49 | 161.75 | 85.9 | |
| productionMinBiasHT | 19882 | 0 | 100.00 | 5.84 | 71.38 | 16.43 | 0.55 | 0.55 | |
| ProductionMinBias | 30950437 | 338533 | 98.91 | 2.29 | 33.10 | 11857.17 | 395.24 | 390.92 | |
| ProductionHigh | 9693192 | 332687 | 96.57 | 5.07 | 71.53 | 8024.93 | 267.50 | 258.32 | |
| ProductionLow | 30902743 | 693027 | 97.76 | 4.54 | 114.28 | 40874.60 | 1362.49 | 1331.93 | |
| ProductionMid | 12931511 | 335299 | 97.41 | 5.17 | 65.77 | 9843.81 | 328.13 | 319.62 | |
| | | | | Average MB/evts | 2.79 | | | | |
| Total num events | 129151381 | | | Total days / months 1 CPU | | 83281.07 | 2776.04 | 2487.12 | |
| GB total | 351676.69 | | | Total days / months (farm) | | 268.65 | 8.95 | 8.02 | |
| TB total | 343.43 | | | Total days / months (farm+df) | | 316.06 | 10.54 | 9.44 | |
| MuDst | 34.34 | | | | | | | | |

Where are we with production ?? (zoom)

◆ In fact, VERY worried about this ...

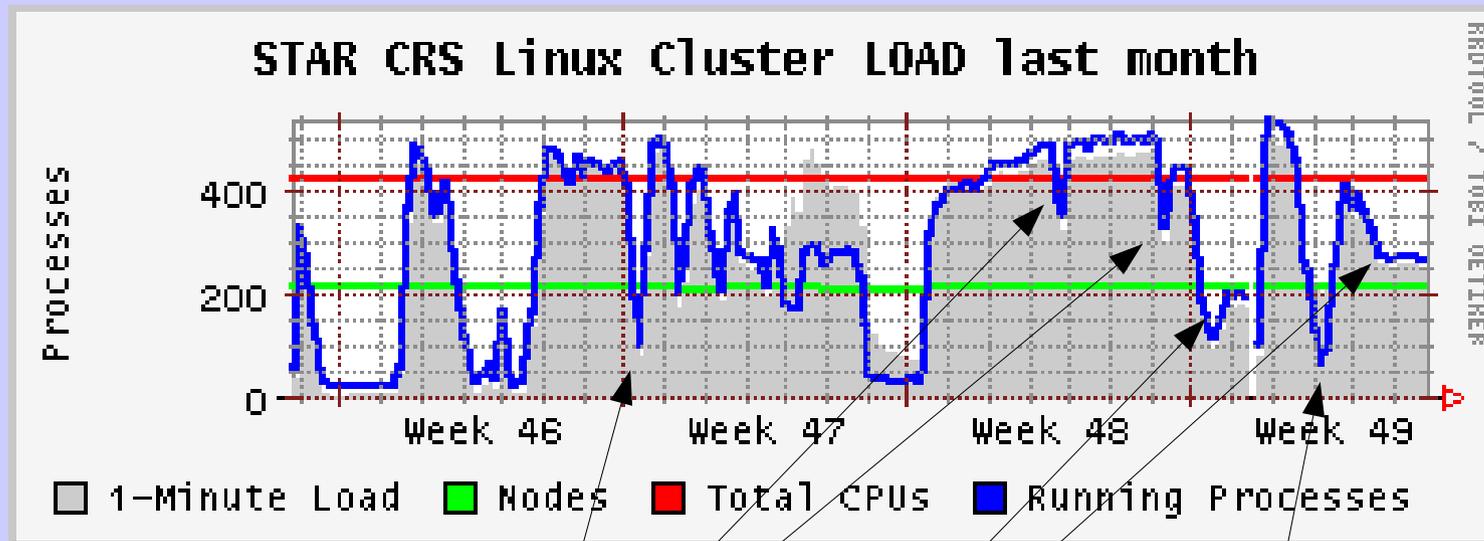
| Trigger | Total month | Remains | FF (* DF) | FF (* DF) left |
|----------------------|-------------|---------|-----------|----------------|
| production62GeV | 128.06 | 21.16 | 0.49 | 0.08 |
| ppMinBias | 5.21 | 3.1 | 0.02 | 0.01 |
| ProductionPP | 74.91 | 42.39 | 0.28 | 0.16 |
| ProductionPPnoBarrel | 8.29 | 0 | 0.03 | 0.00 |
| ProductionPPnoEndcap | 1.97 | 0 | 0.01 | 0.00 |
| ProductionCentral | 18.42 | 18.42 | 0.07 | 0.07 |
| ProductionHalfHigh | 23.52 | 14.82 | 0.09 | 0.06 |
| ProductionHalfLow | 161.75 | 85.9 | 0.61 | 0.33 |
| productionMinBiasHT | 0.55 | 0.55 | 0.00 | 0.00 |
| ProductionMinBias | 395.24 | 390.92 | 1.50 | 1.48 |
| ProductionHigh | 267.50 | 258.32 | 1.02 | 0.98 |
| ProductionLow | 1362.49 | 1331.93 | 5.17 | 5.05 |
| ProductionMid | 328.13 | 319.62 | 1.25 | 1.21 |
| | | | 10.54 | 9.44 |

What is causing this low data production rate ??



Where are we with production ??

- ◆ Resource utilization ~ 50% (should be 85%)
- ◆ Serious infrastructure issues need attention



Network collapse

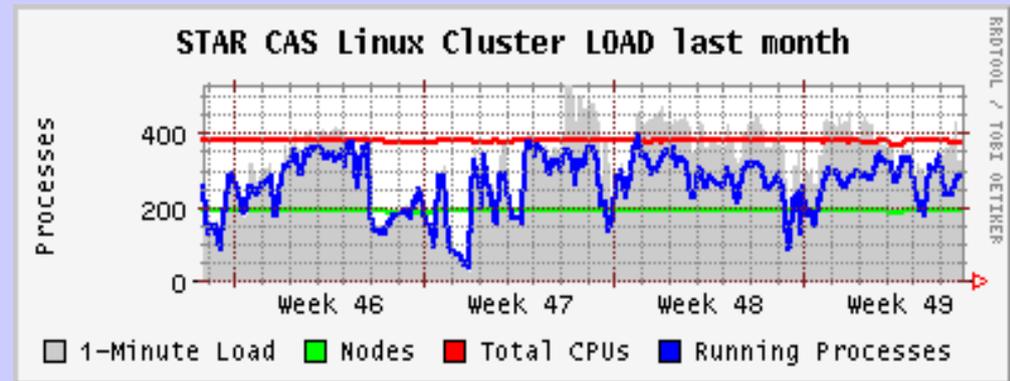
AFS problem, job died

No disk space for production left
Efficiency drop to 50% net effect ...

Choice and priority ...

◆ Emergency solutions

- ◆ If need be, CAS nodes can be re-allocated to production
 - ◆ Probably, 20% shift would not be felt. From 9.44 months
 - 20% -- 7.55
 - 30% -- 6.61
 - 50% -- 4.71



- ◆ Procurement will not come on time (once again)
- ◆ 1.2 passes do not allow for disaster recovery (already barely suffice to make good Physics)

Conclusions

- ◆ Project had to be stopped due to problems ...
- ◆ ... but Sti is now on the right track
 - ◆ Sti IS our tracker of the future, the question is how far that future is !!??
 - ◆ Opportunity schedule in Spin p+p pass (December 15th)
 - ◆ Pragmatic approach (whatever is ready can be used)
- ◆ Production as it stands suffers severe problems
 - ◆ Infrastructure issues can no longer wait ... will be addressed ASAP (here also, be prepared for actions you won't like)
- ◆ All odds anyhow vote for planning and priority
 - ◆ Refer to magic table for trigger-setup, define data-sets
 - ◆ Discuss and establish your Physics objectives and topics NOW !!