Report from the muon software pseudo-coordinator

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Santa Fe Muon Fest

22nd June 2004

* Shouldn't I be enjoying the soccer cup in Europe ?

Outline

- The good
  - CCF
  - MUTOO
- The bad ?
- The ugly ?

- What was done in a year ?
- Where do we stand ?
- Where will we go ?

The good

- Back at last Santa Fe gathering, I found myself asking, as chairman of the software panel :

> Do we have everything we need to get the physics out of the data ?
>
> → Be ready for QM2004
>
> → Be ready for Run 4

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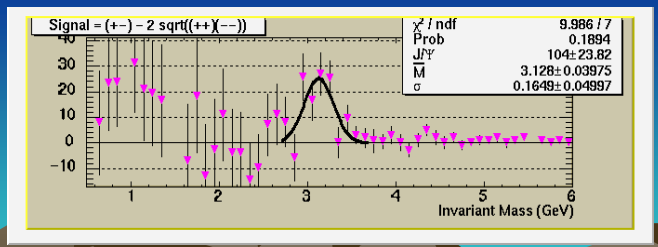
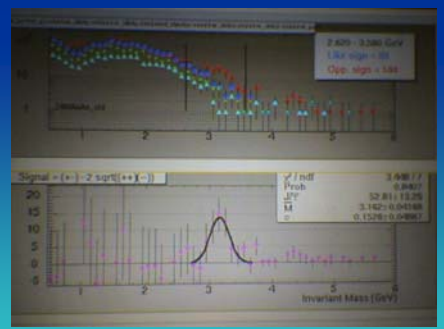
- Retrospectively, we can answer yes and yes !
  - We had two muon talks at QM04 (stopped hadrons and J/ψ)
  - We saw J/ψ from AuAu before the end of run 4 !





The good : CCF

- Smaller dedicated productions elsewhere :
  - Run 2 p+p dimuons (RHIC/CCJ/CCF) almost published.

  Most of the signal processing was done overseas !

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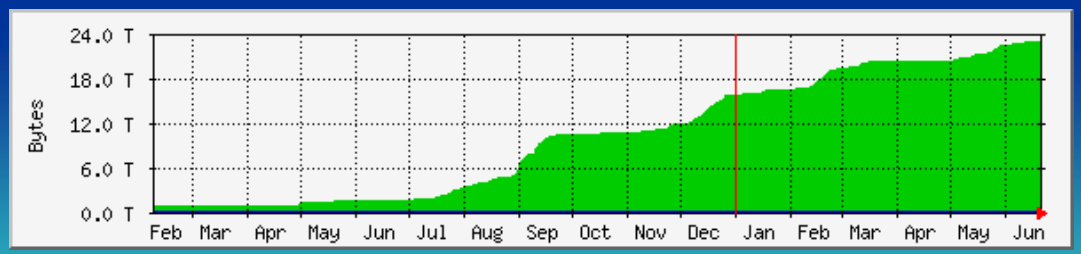
- Still true for rare events analyses :
  - dAu and pp J/ψ came out of CCF
  - Filtered PRDF were reconstructed there faster and more often than the global production at RCF…
- Not true for "minimum bias" analysis
- Not true for Au-Au for now
  - (but repassing could be usefull)

The not so good : CCF

- CCF is not anymore able to run phenix reconstruction software !
  - Still under RH7 (should change some day…)
  - Phenix code is still reconstructable under RH7
  - But objectivity access doesn't work
- Should be solved with pro.55 (postgres) ???
- Hoping that this will work, we transferred Au-Au data to CCF
- 24 TB today

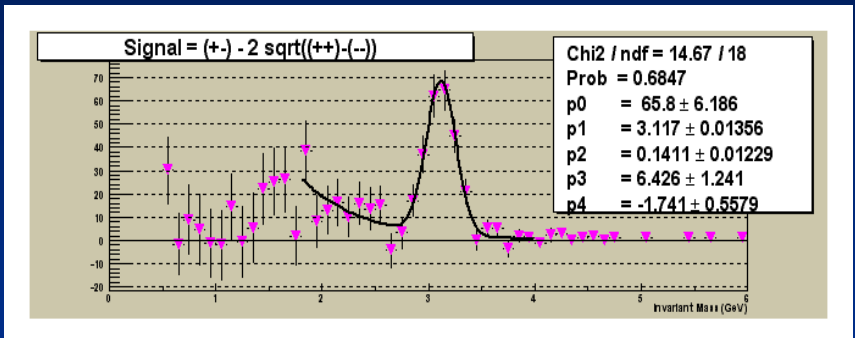


The good : MUTOO

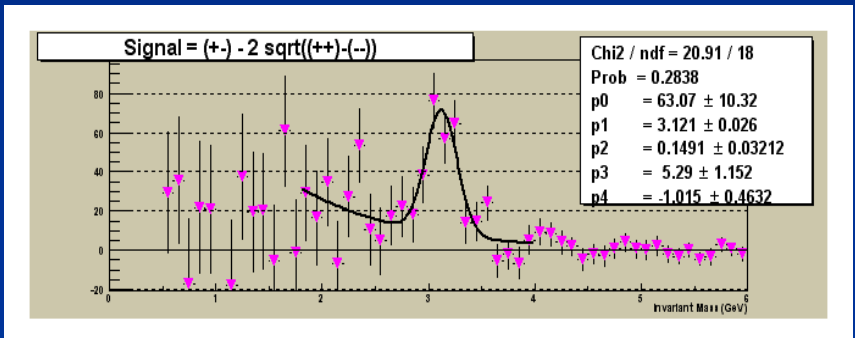
- MUTOO is our one and only framework !
- It has fulfill all its goals :
  (but maybe raising the number of active coding people ☺)
  - More robust wrt indexes and memory leaks
  - More documented (doxygened)
  - Equivalent performances before the jump

- We'll run both frameworks for the d-Au analysis and make(extensive)comparison.
  - (still some bugs, ndst production with both objects launched by the end of the week ?)
- ~~JPsi embedded in HIJING for both framework ?~~

Some dAu comparisons



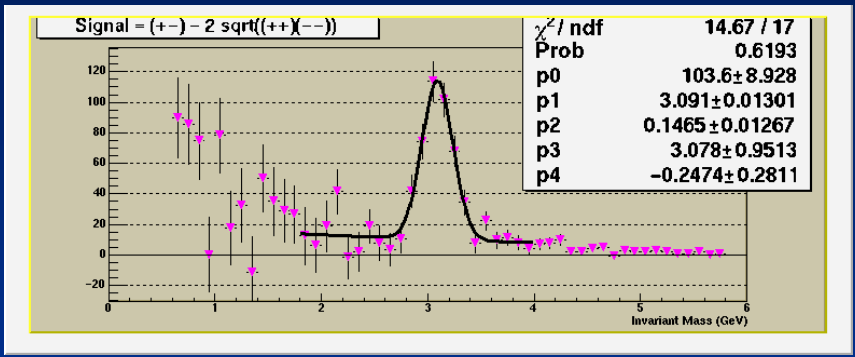
Old MUT
233 JPsi with
141 MeV resolution

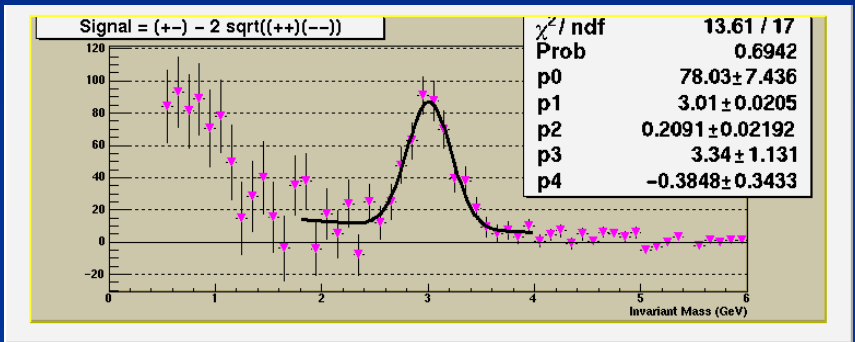


MUTOO
236 JPsi with
149 MeV resolution

(dAu north 2D on 28th july)

Some pp comparisons



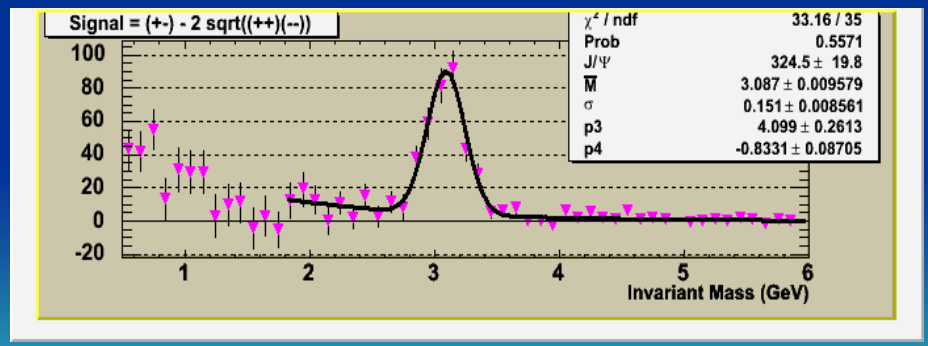


(pp north on 17th nov)

Old MUT
381 JPsi with 147 MeV resolution

MUTOO (with eq road finding)
409 JPsi with 209 MeV resolution
Resolution issue was going up and down and re-addressed at the end…

325 JPsi with 151 MeV resolution

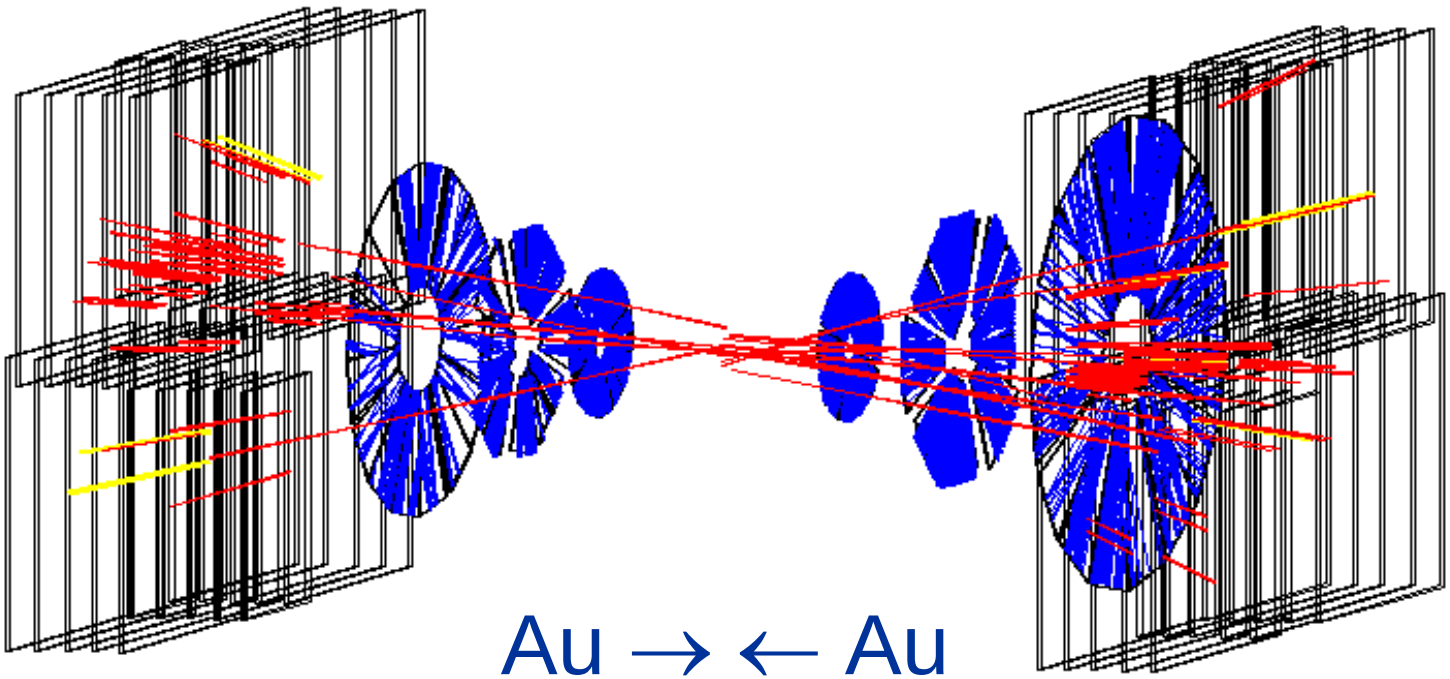


(pp north at the end of 2003)

So for good

We forget about MUT
and use MUTOO for Au-Au

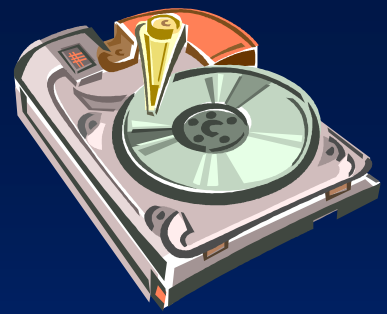
The bad



The bad : Au-Au

- Not speak about "physics" problems
  - Definition of centrality, strange events
  - Reconstruction vs centrality
- Nor performances of the code
  - Timing, exceeding array sizes…
- Etc. (see earlier talks : Hugo, ViNham,…)
- The enormous size of data implies :
  - Deep changes in strategy creating new problems…

Au-Au formats and problems



- No more filtered PRDFs
  - 200 TB too big for us to filter + lvl2 vs lvl1 technicalities
- But reconstructable DSTs
  - Which were not always reconstructable (fixed now)
  - Which take more CPU than PRDF (to be fixed if needed…)
  - Which give less independence wrt RCF productions
- Good old nanodsts
  - With random road associated in case of multiple roads (fixed but not yet for pro.54)
- Picodsts start to get fat ⟵ Work in progress
  - Cut at picodsts creation (there was an annoying bug in this neverused part of MWGpico)
  - ~ 30 mn to make one mass plot (~the time needed to make the 66 plots needed for dAu on a laptop)
  - We'll probably need new picodst-like tools (mixing events ?)

Au-Au productions and problems

1. Pro.52 (140 Mega MB events) 1/10 of data
   - No signal in the north
   - Suffers from exceeding track arrays
   - Suffers from picodsts cut bug (to be redone) ← **Worth it…**
2. Pro.54 (548 Mega MB events) 1/3 of data
   - See Hugo's talk for picodsts details (cuts and location snapshot)
   - Note that nanodsts suffer from random road associated in case of multiple roads
     - Fixable if we get back reconstructed dsts from HPSS
   - Reconstructable dsts @ CCF
     - To be hopefully repass with pro.55 @ CCF

   One or the other is crucial
3. Pro.55 (under construction)
   - Will pass the other two thirds of data
   - Will have (at last !) a minimum bias part

   Crucial ! Be aware !
   Look for bugs !
   Check everything !

Who is the ugly ?

WANTED

dismissed or working
reward to be debated

Coordinators history

- A year ago, I naively asked : © Santa Fe 2003
  - Do we have/need a muon software coordinator/guru ?
  - Melynda didn't want the position anymore
  - Sean & I found ourselves appointed by Ken & Doug
- Last spring, Sean left and Ken & Doug decided to leave me alone in charge, after Sean's specific duties were shared by other people.

David S. has graciously agreed to server as interm liason with the BNL analysis and production crew

Hugo will act as code librarian for mutoo & mutoo_subsysreco packages

David/Jamie will act as code librarians for muioo

The online docs for both new framework packages will be relcoated and updated by the respective librarians

Sean's testament

The ugly coordinator job

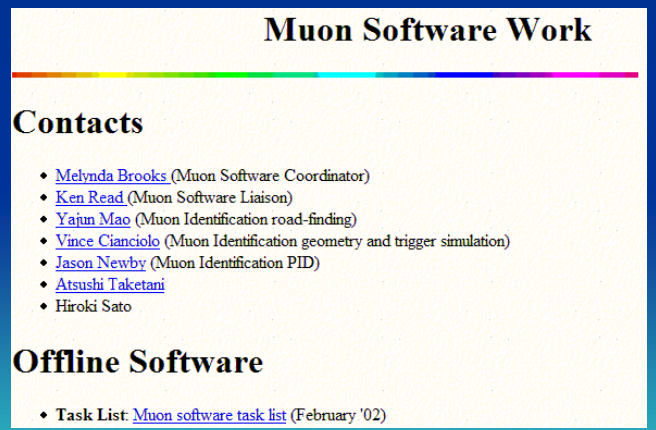
- Coordination could be a 100 % job !
  - Maintain documentations and todo lists !!!
  - Attend ~ five meetings a week
  - Read (and understand) many of your emails guys
  - Test things as much as possible (look at commits ?)
  - Eventually do software development work…
- How was it covered up to now ?
  - Indeed : 50 % Sean + 50 % Raph make 90 % *
  - A little drop around quark matter…
  - And since Sean has left : 10 % Raph = the ugly !

* 10% loss due to beer sharing

The ugly wants to get better

- Thanks to you guys, we don't need so much coordinator ! (smart coders, good proxies…)
- However, I have a bit more time now, and plan to get back to work through :
  - Reviewing the software web page
  - Add some pages !
    - Specific muon productions
    - Software performance history
    - Todo lists

  (in a shared webspace…)



Muon Software Work

Contacts

- Melynda Brooks (Muon Software Coordinator)
- Ken Read (Muon Software Liaison)
- Yajun Mao (Muon Identification road-finding)
- Vince Cianciolo (Muon Identification geometry and trigger simulation)
- Jason Newby (Muon Identification PID)
- Atsushi Taketani
- Hiroki Sato

Offline Software

- **Task List**: Muon software task list (February '02)

(state in march 03)

Conclusion

While we are here, don't hesitate to tell me what you would like a muon software coordinator to do !

(or not to do)