L3 Muon Unpacking Status

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DØ L3 Filtering Meeting

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Outline:

- Online/Offline
- Status
- Code changes,
- Compare tracks histos
- RunConfigMgr tests for online
- Memory leak
- Timing
- What's next?

New unpacking Online/Offline

Written by Scott Snyder

- The new unpacking still needs a cfg.dat file.
- The information extracted from the cfg.dat file is the list of modules per muon crate and their corresponding type (MDT/PDT/SCIN).
- The order in which they are written inside a crate does not matter for the unpacking, nor if a module is missing.

L3 Online:

- 2 packages involved:
- `l3fmuo_unpack` modified by Scott Snyder December 2001, not in CVS, need some patching with p11, **really 4 files that needs some modifications** from Scott and to be put in CVS.
- `simpleunp_muo_unpacker` is a new package, in CVS, not in the release, contains the unpacking itself.

Offline unpacking:

- `simpleunp_muo_hitreco` is a new package, in CVS, not in the release, uses unpacking methods of `simpleunp_muo_unpacker`
- `muo_hitreco` is to be replaced by `simpleunp_muo_hitreco`

Status

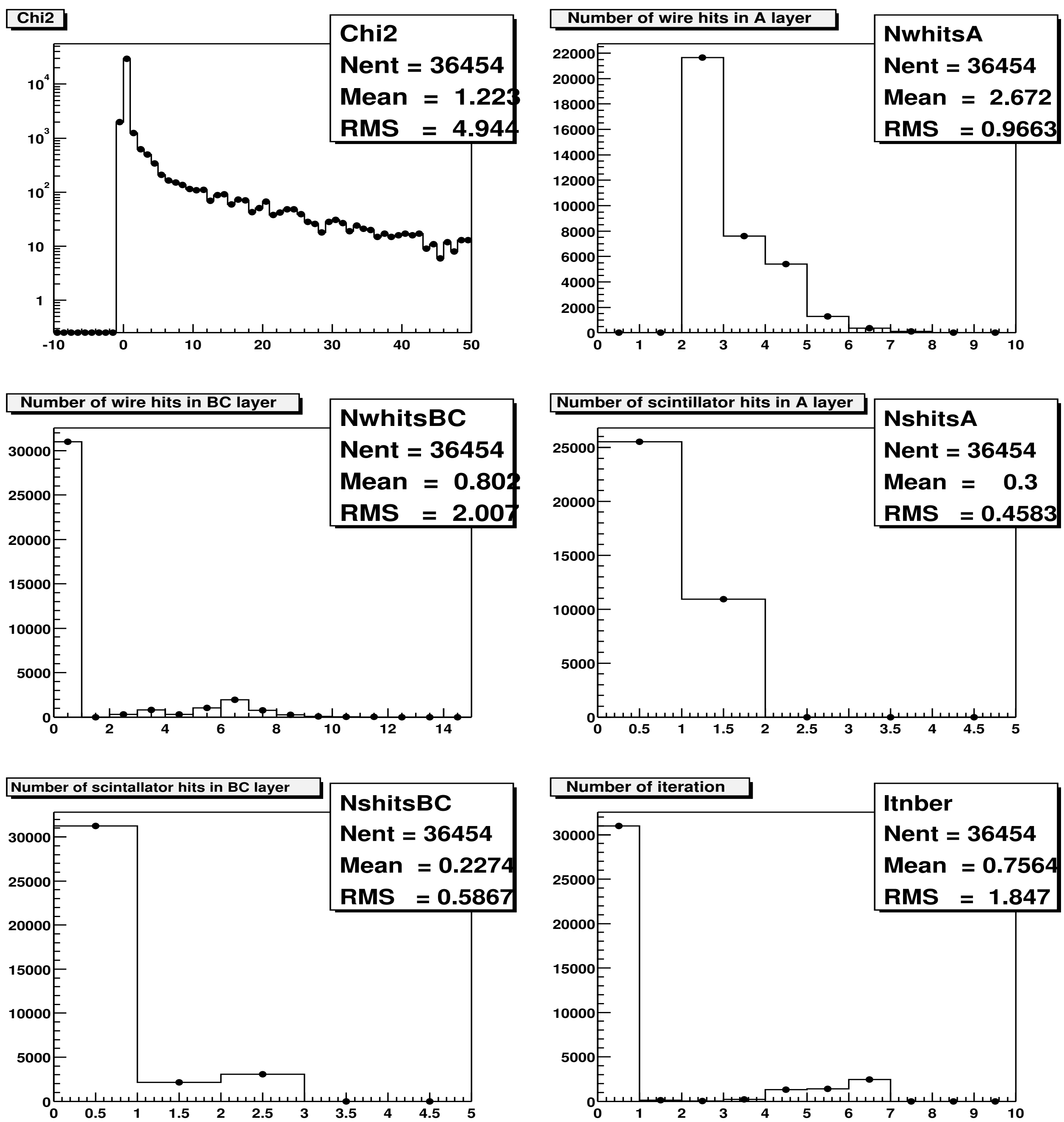
- Copied the code from Scott Snyder (/prj_root/760/infr_1/snyder/unp4).
- Compiles and runs with tsim_l3,
- Test in totalview that I am really running the new unpacking and not the old one,
- Tested in an area without cfg.dat file and using `rdc_run_config_mgr`,
- Tested without `run_config_mgr`, using `L3RunConfigMgr`
- Needed to patch 4 files in `l3fmuo_unpack` (The 4 files that basically need to be put in CVS)
- **Nearly/Exactly** identical results for L3MuoLocal
- **Nearly/Exactly** same numbers of tight, loose, astubs!
- Problem with timing: solved
- Memory leak under control?

Code changes

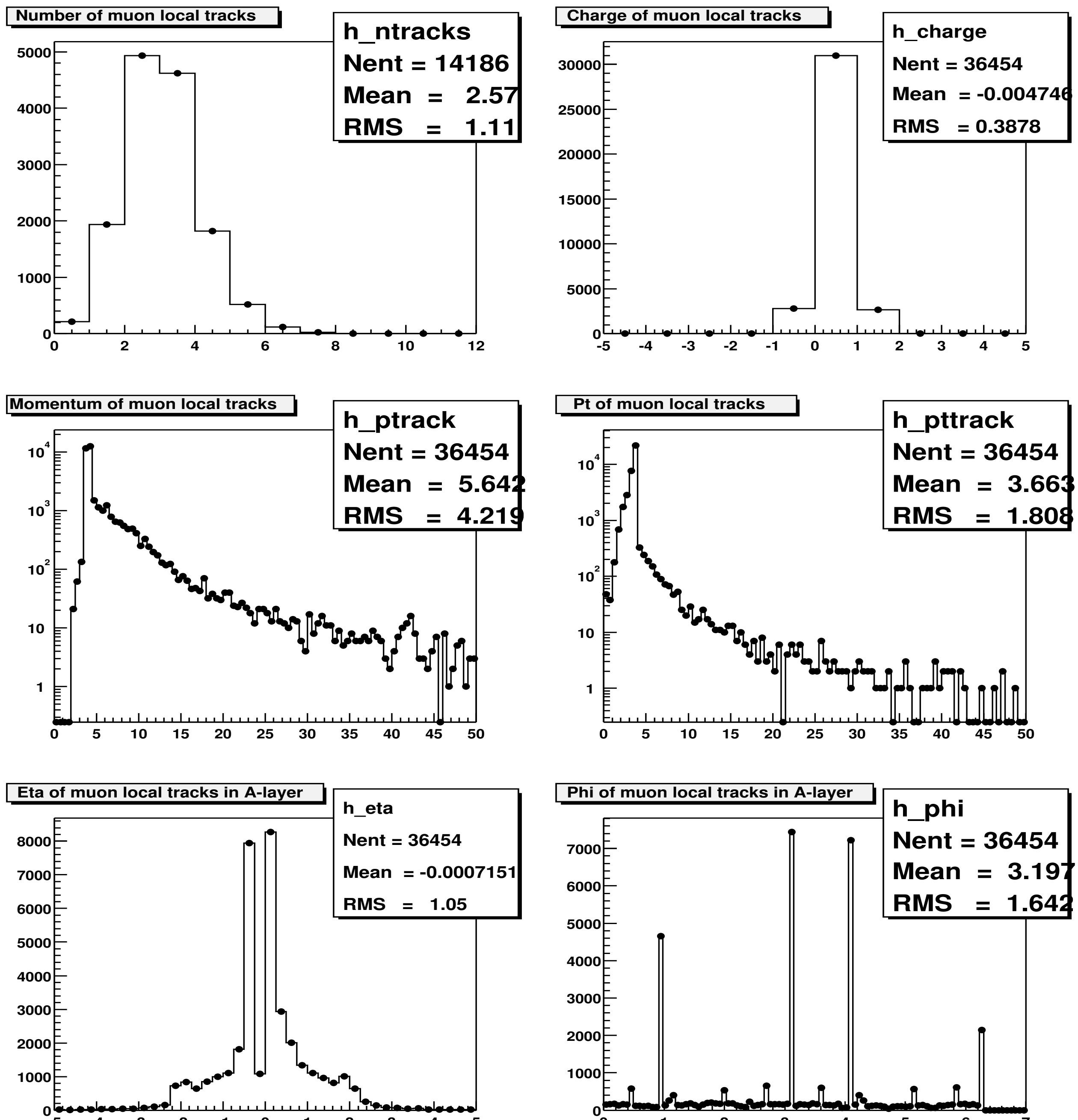
Put together Scott Snyder's and p11.01 code

- The unpacking code has been lying on Scott's area since December, while the rest of the code has been changing.
- Some bug fixes has been put into `l3fmuo_unpack` since Scott checked out `simpleunp_muo_unpacker`
- Remove some hardwired output to logfile for timing,
- 4 files concerned with a need to "patch".
- Now I can check out the official `l3fmuo_unpack`, replace only 4 files and the new unpacking is there.

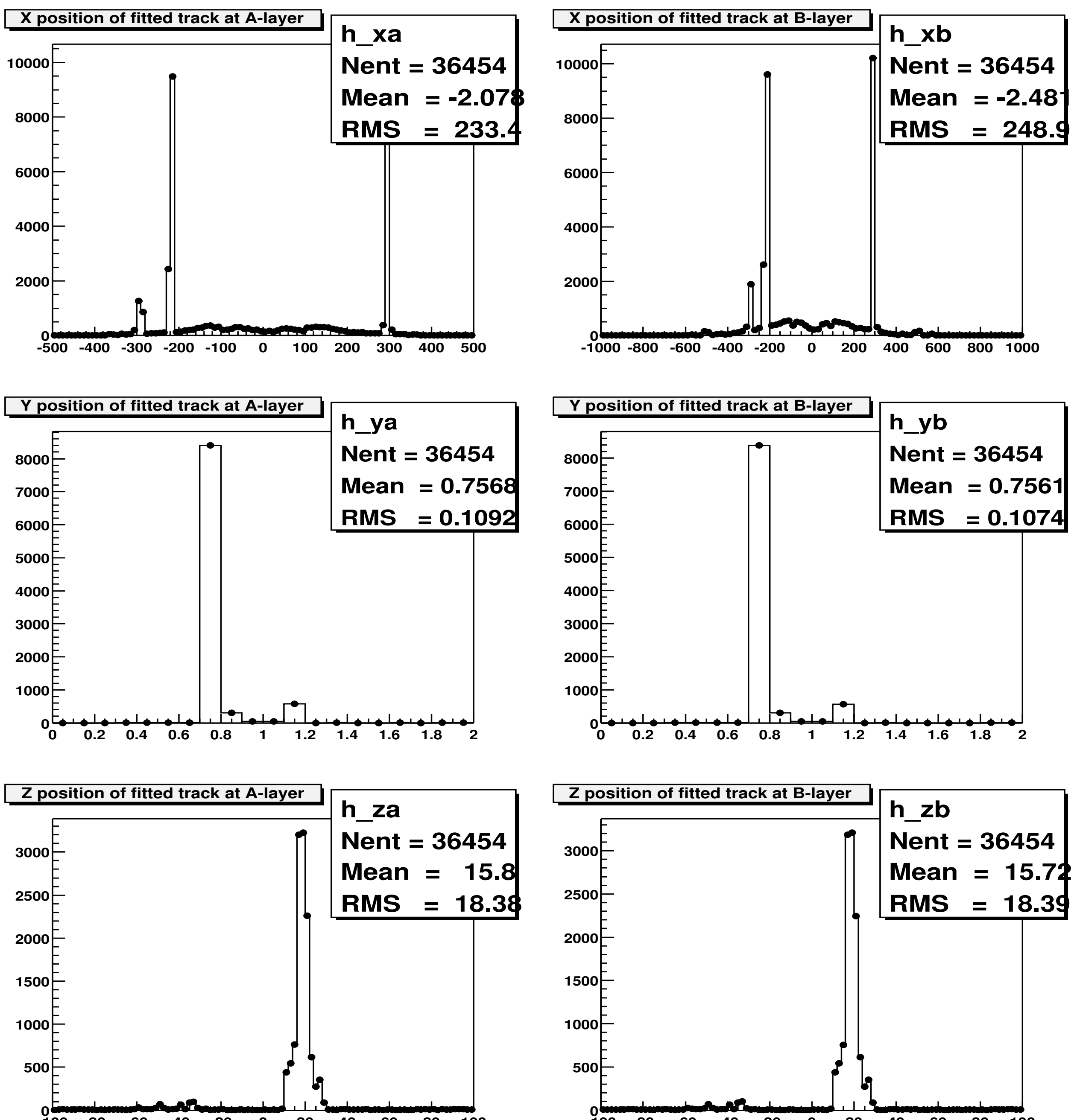
Distributions of quality variables
In special muon run



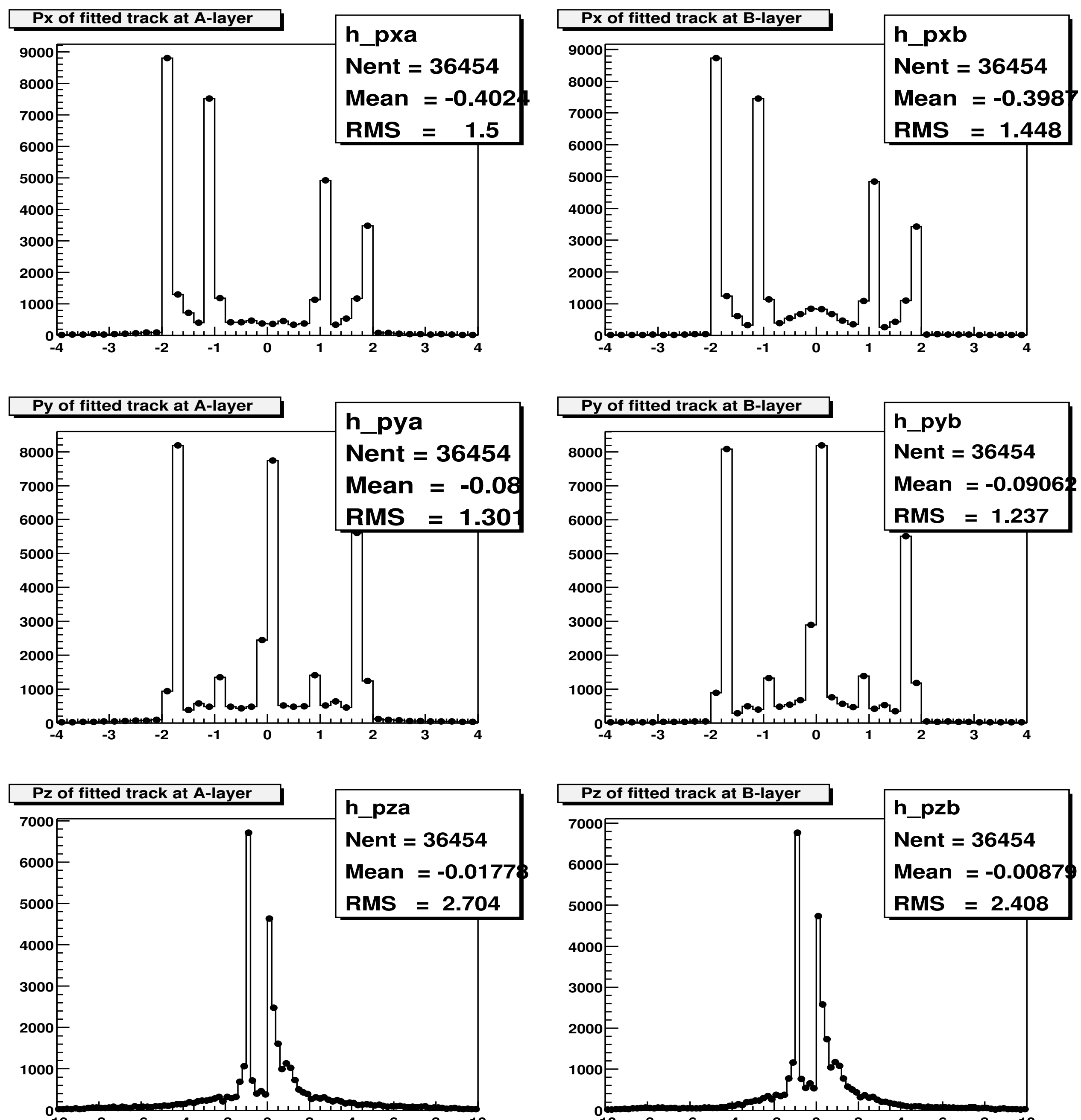
Distributions in L3MuoLocalDebug (I)
In special muon run



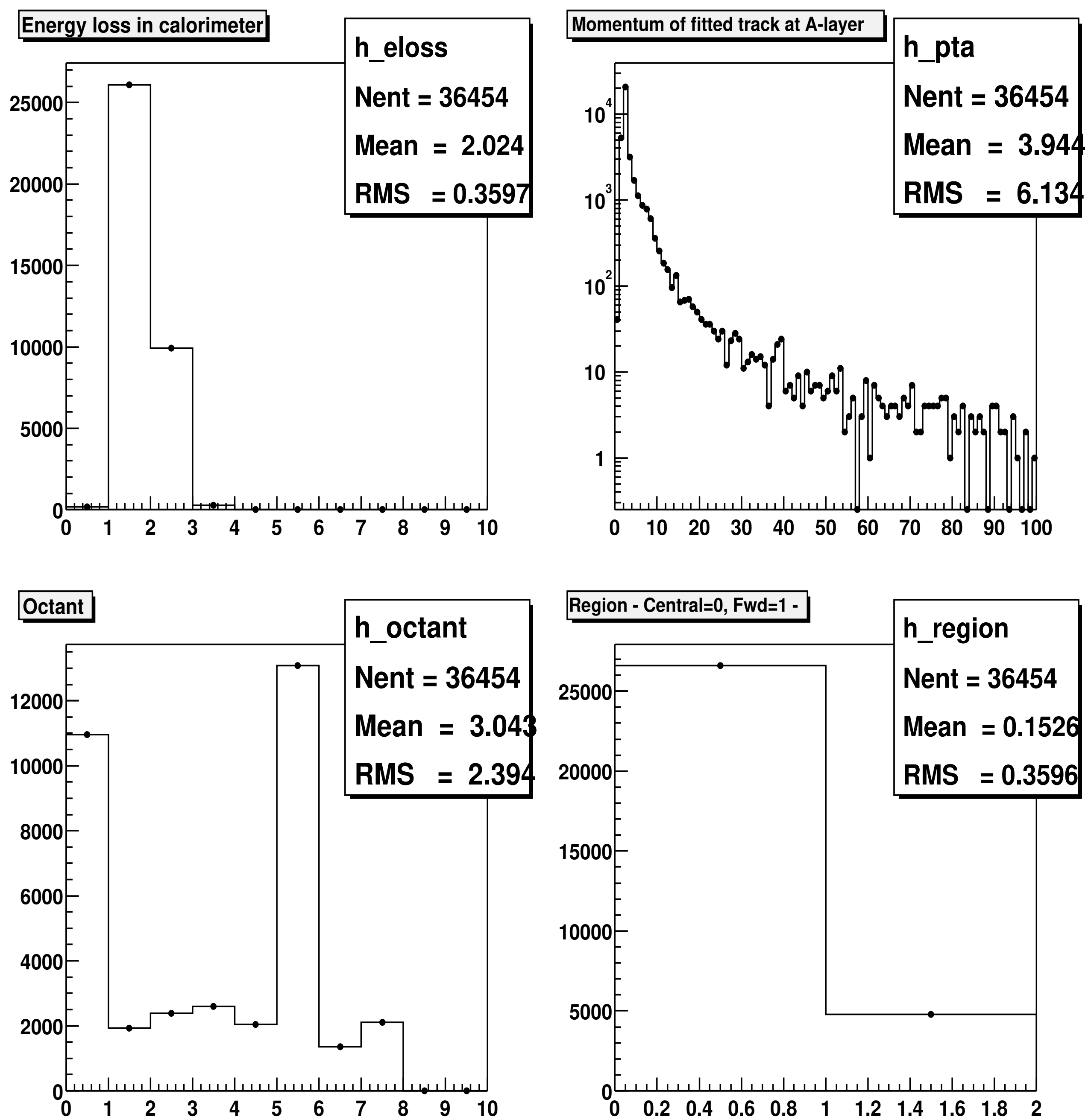
Distributions in L3MuoLocalDebug (II) In special muon run



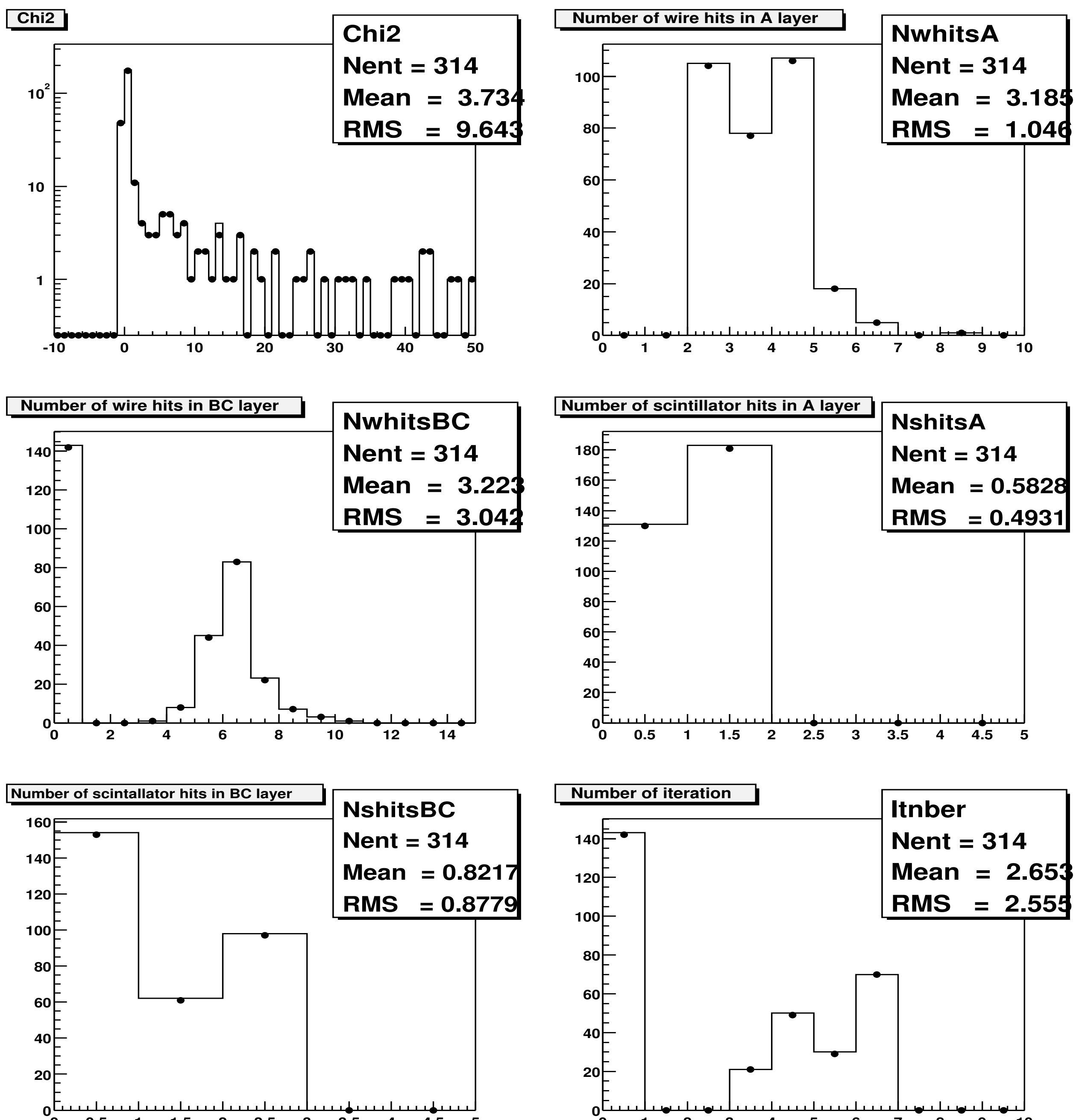
Distributions in L3MuoLocalDebug (III)
In special muon run



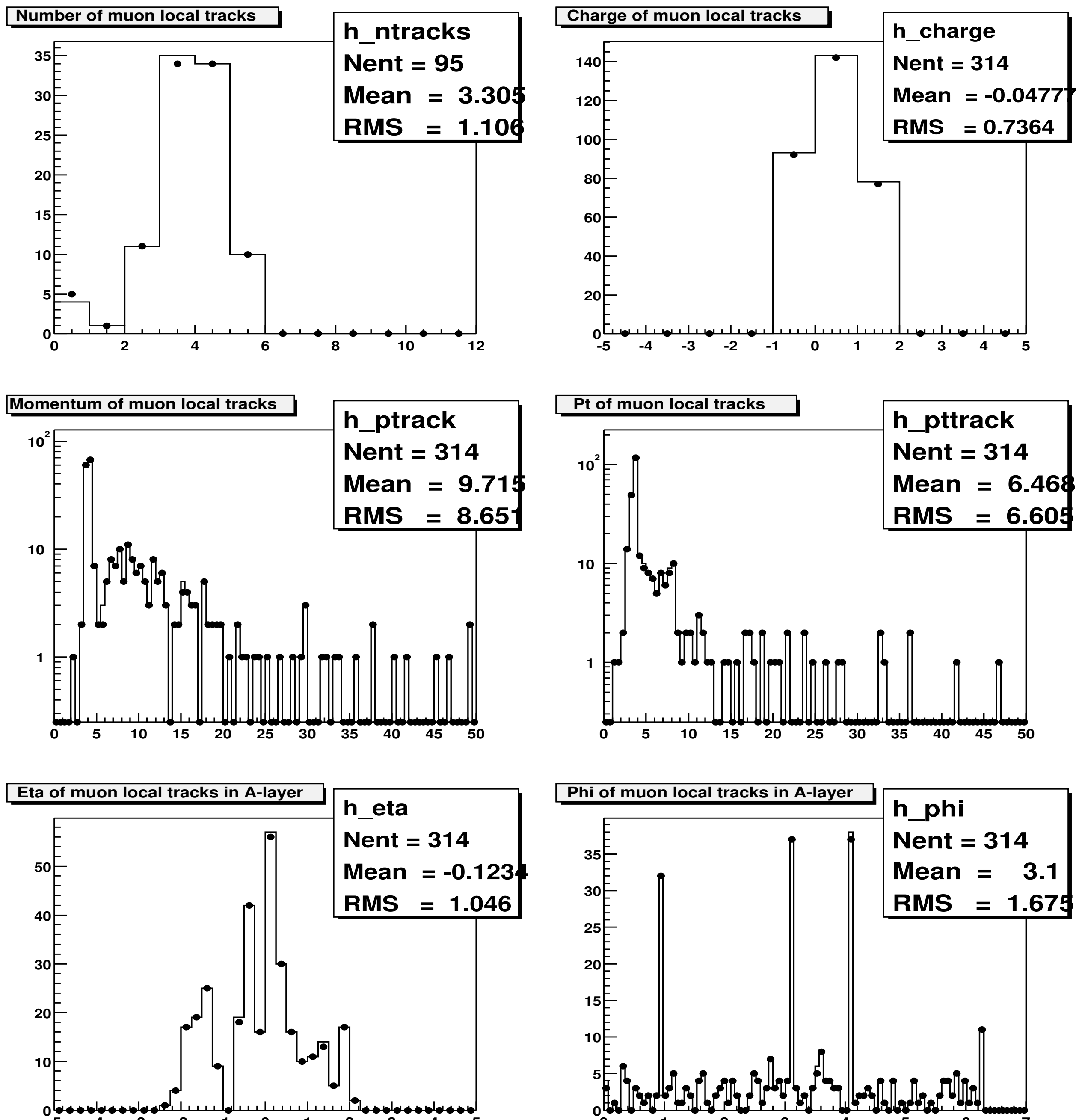
Distributions in L3MuoLocalDebug (IV)
In special muon run



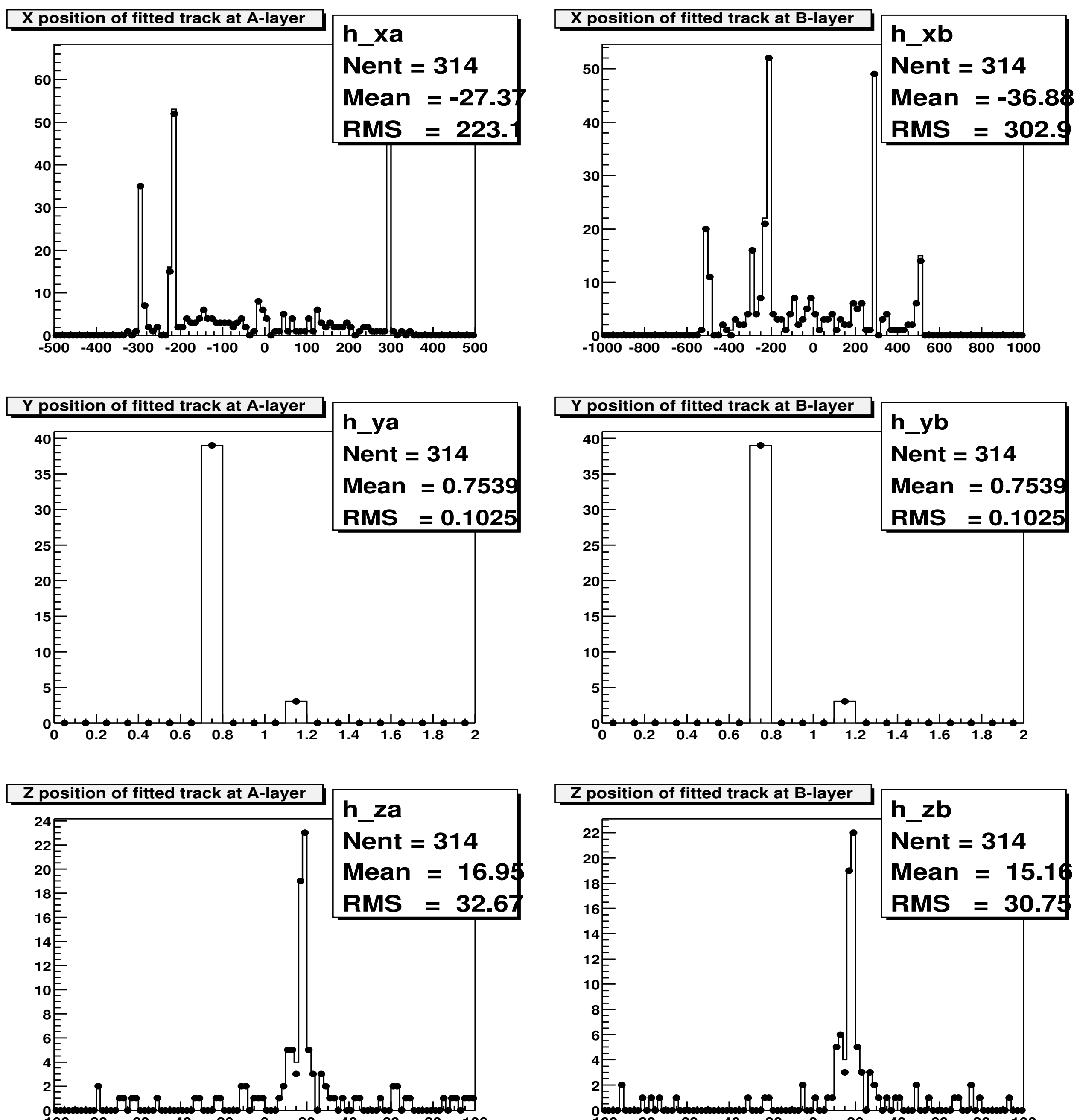
Distributions of quality variables In "gold plated events"



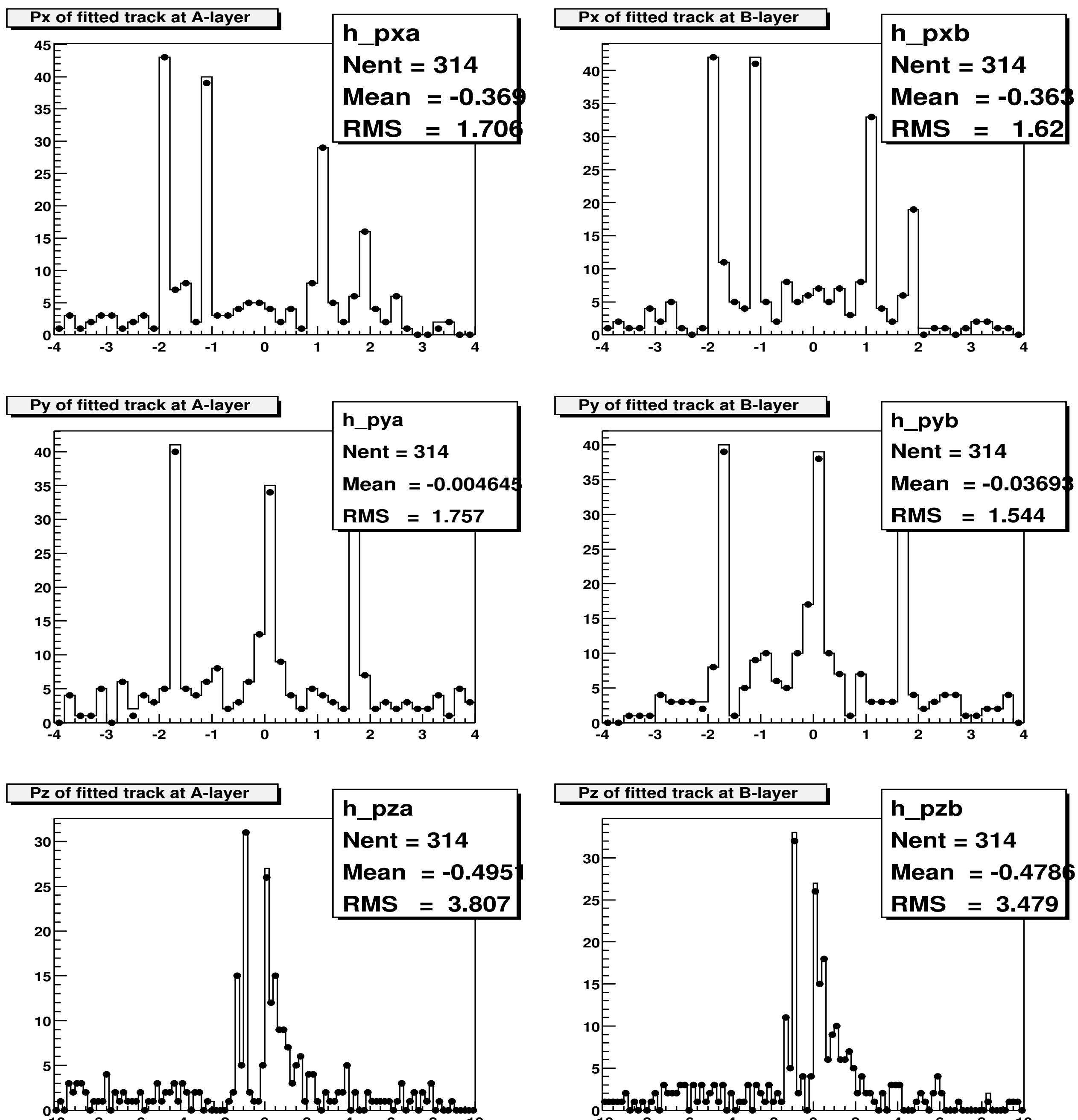
Distributions in L3MuoLocalDebug (I) In “gold plated events”



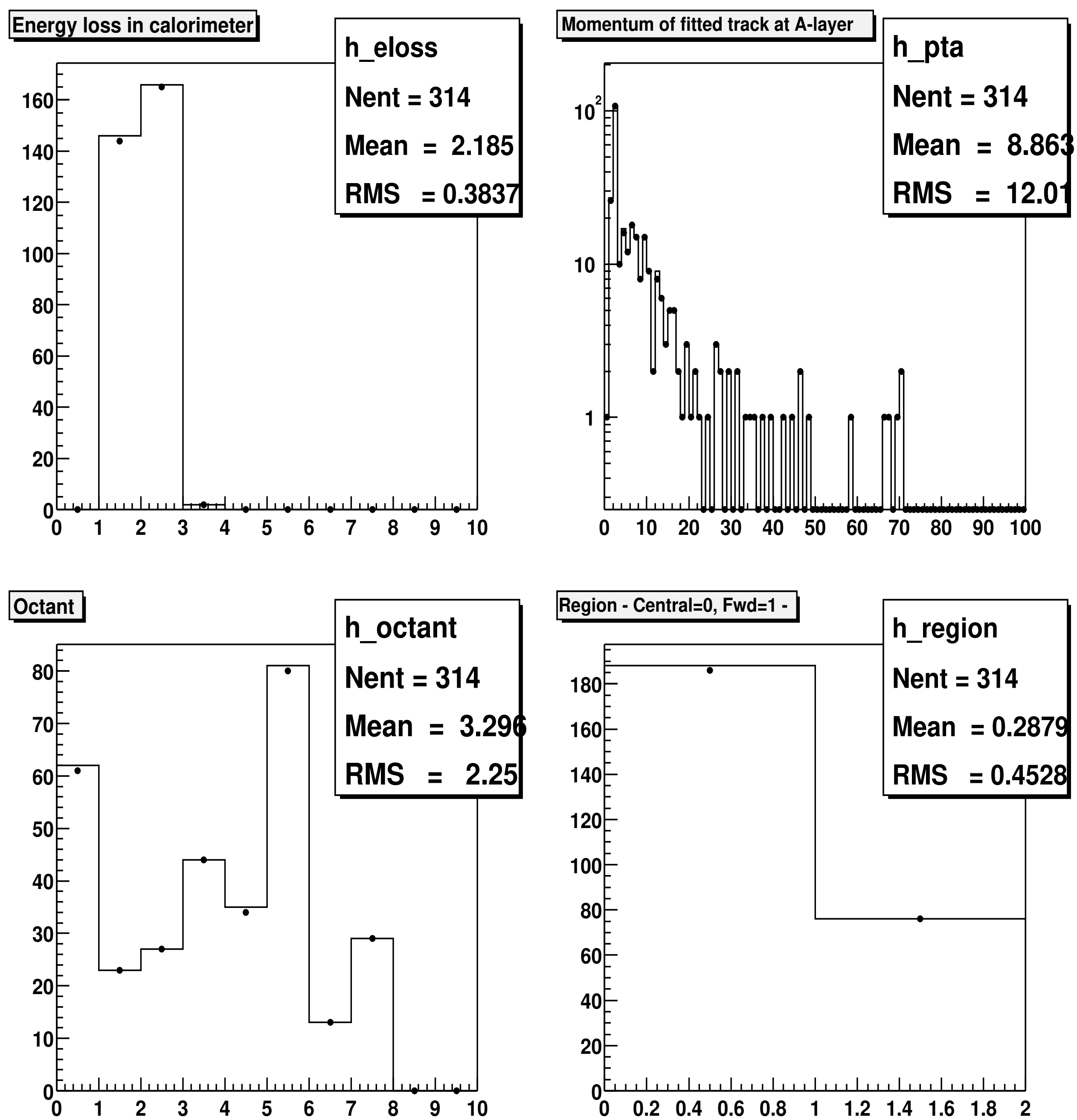
Distributions in L3MuoLocalDebug (II) In "gold plated events"



Distributions in L3MuoLocalDebug (III)
In “gold plated events”



Distributions in L3MuoLocalDebug (IV) In "gold plated events"



Number of tight, loose and astubs with new and old unpacking

Calculated on special run and "gold-plated" events

Data type	Unpacking	cfg file	TIGHT	LOOSE	A-STUB	Nbr of events
"Special"	Old	special	5134	235	10936	14186
	Old	mixed	4017	158	9407	14186
	New	special				
	New	rdc	5133	235	10934	14186
	New	mixed	5134	235	10936	14186
	New	mc				
"Gold-plated"	Old	goldplated	151	14	183	95
	Old	mixed	106	5	140	95
	New	goldplated	151	14	183	95
	New	rdc	149	14	181	95
	New	mixed	151	14	183	95
	New	mc	151	14	183	95

Tests for online

In the online the `run_config_mgr` is not available as a framework package, but can be called as a tool by using `L3RunConfigMgr`

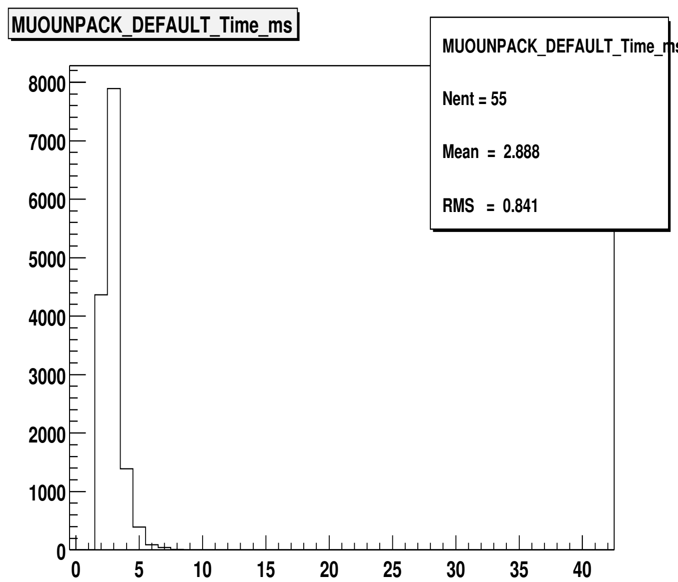
Need to tell in the trigger list how many muon crates are in the run.

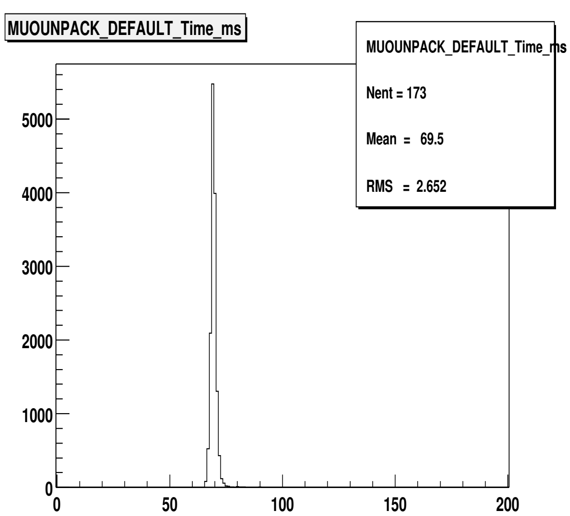
Compare old with new unpacking with the online setup

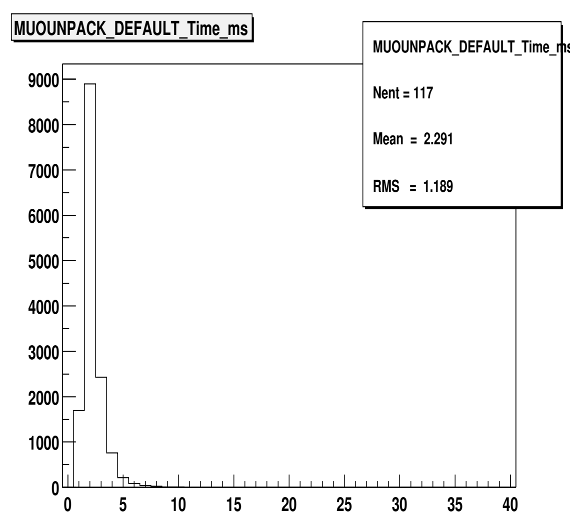
- Run with the old unpacking with correct/mixed lines/mixed crates cfg.dat file,
- Run with the new unpacking with correct/mixed lines/mixed crates/monte carlo cfg.dat file,
- To do: test with a cfg.dat file with missing module.

For special muon run the new unpacking with correct/mixed lines/monte carlo cfg.dat file gives exactly the same distributions as with the old unpacking and correct cfg.dat file.

Timing for old and new unpacking







Memory leak size old/new unpacking

Measured memory leak on 95 “gold-plated muon events”

- Old unpacker: 38.7 Mb/95evts
- New unpacker: 34.1 Mb/95evts
- To do: run only unpacker, without tool. Needs to modify trigger list.

Conclusions

Comparison between old and new unpacking:

- Distributions exactly identical.
- Number of TIGHT, LOOSE, ASTUBS exactly indentical.
- Timing: OK.

To do:

- Test with missing module/crate
- check L3MuoUnpack debug block
- Is the new unpacking used in offline?
- Put new unpacking in CVS
- Memory leak check
- test with a complete trigger list
- Run on MC
- event display/mixed lines