Muon L1 Emulator

Ivan Mikulec
HEPHY Vienna

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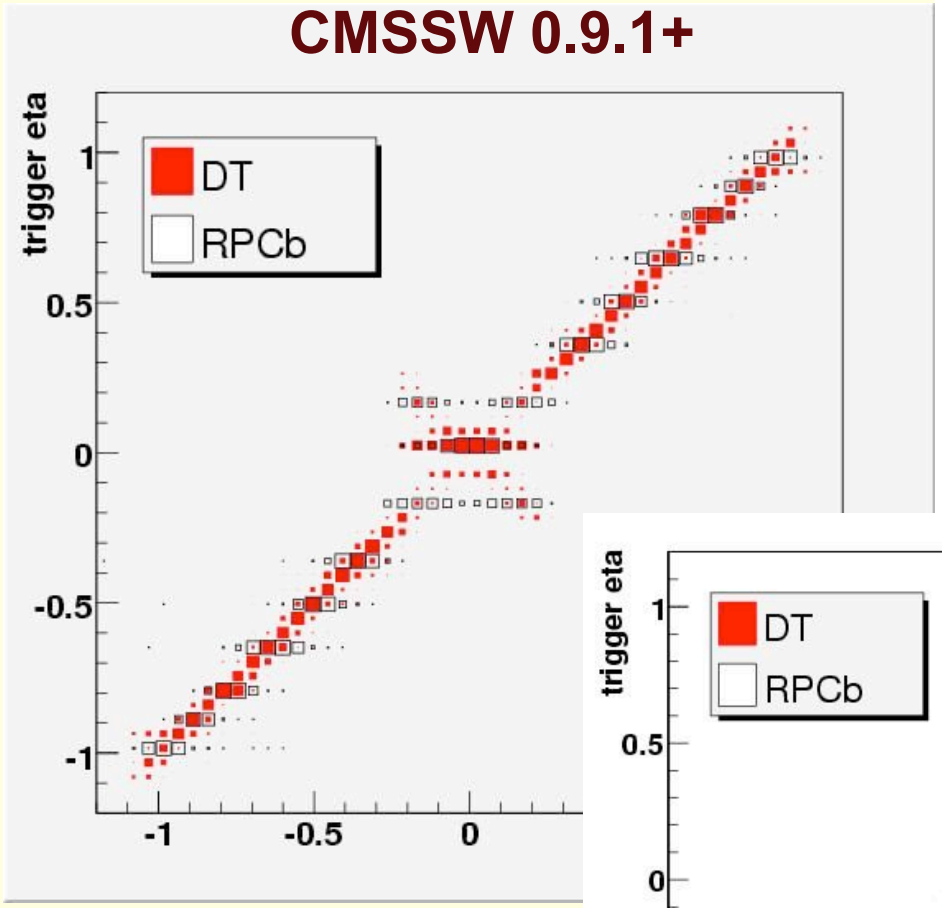
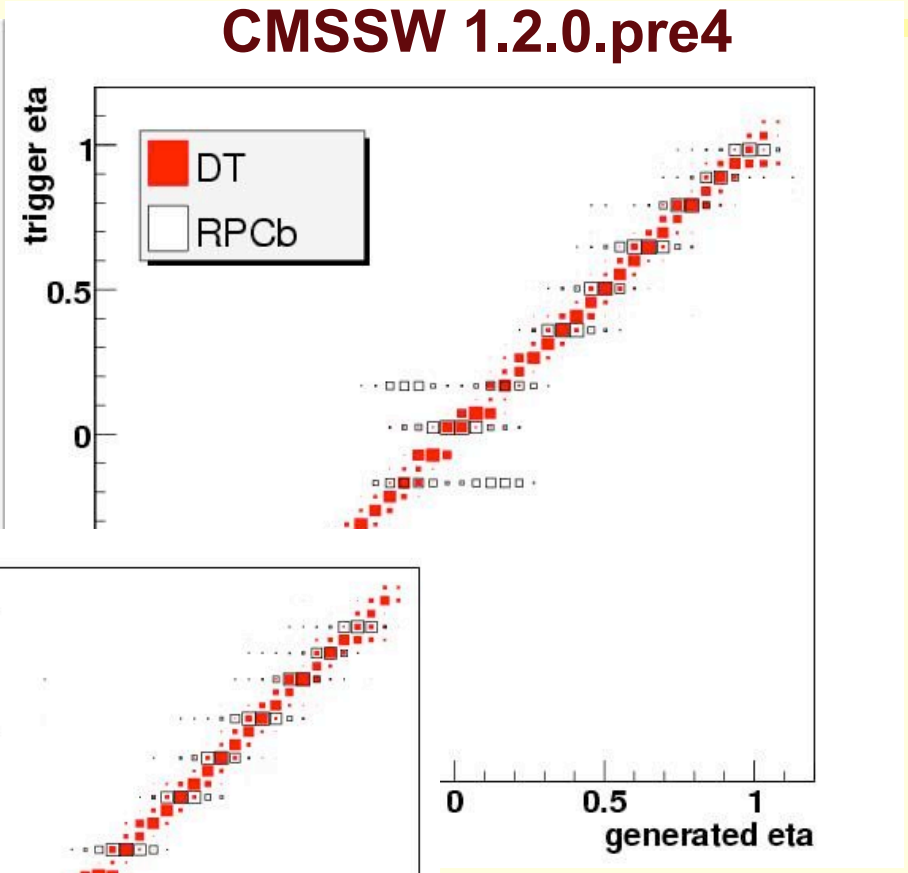
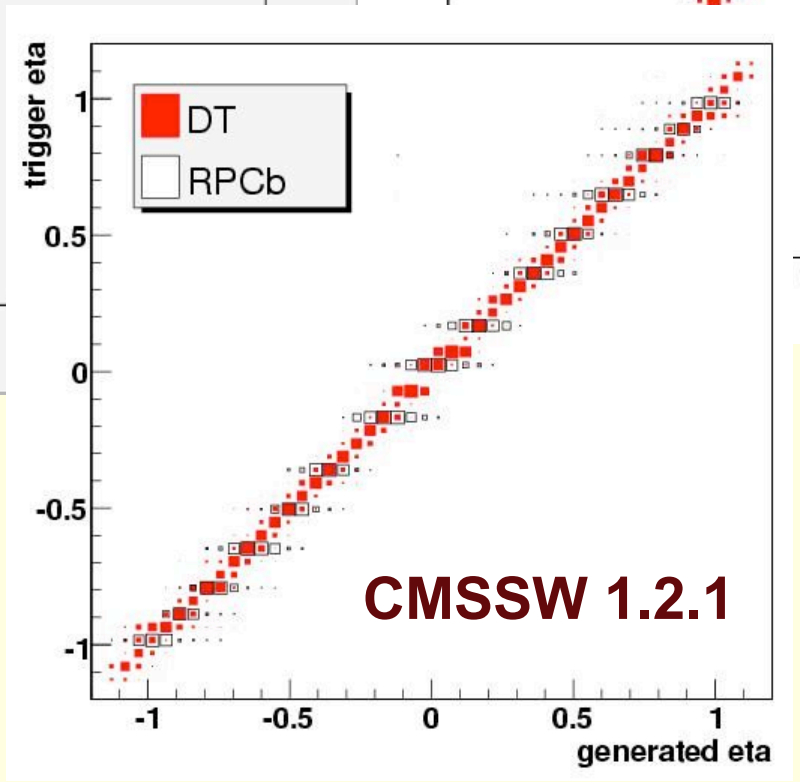
Status of the muon trigger emulator

- **The muon L1 emulator has been stable since several months performing not far from ORCA performance (see my talk from 16 Nov - Online Selection meeting) with only occasional minor fixes**
- **Before the CMSSW_1_2_0 release, main remaining problems preventing from reaching the ORCA performance were:**
  - **RPC trigger eta measurement had wrong sign**
  - **DTTF ghosts level was too high**
  - **CSCTF p_T measurement had bad resolution**
  - **DTTF-CSCTF data exchange was missing**

Problem at the central eta



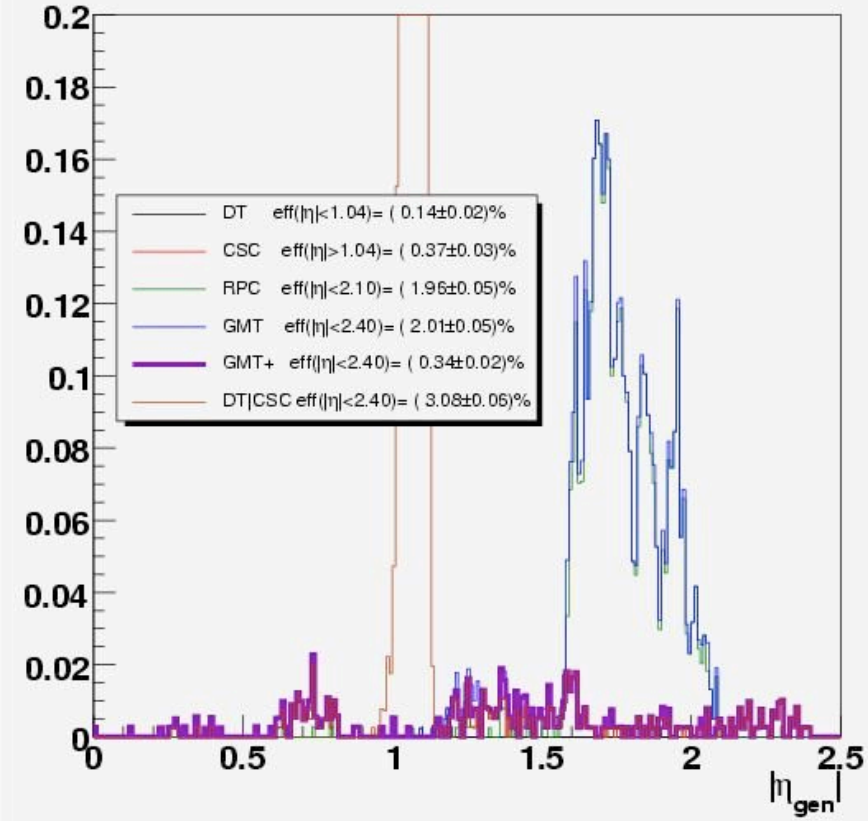




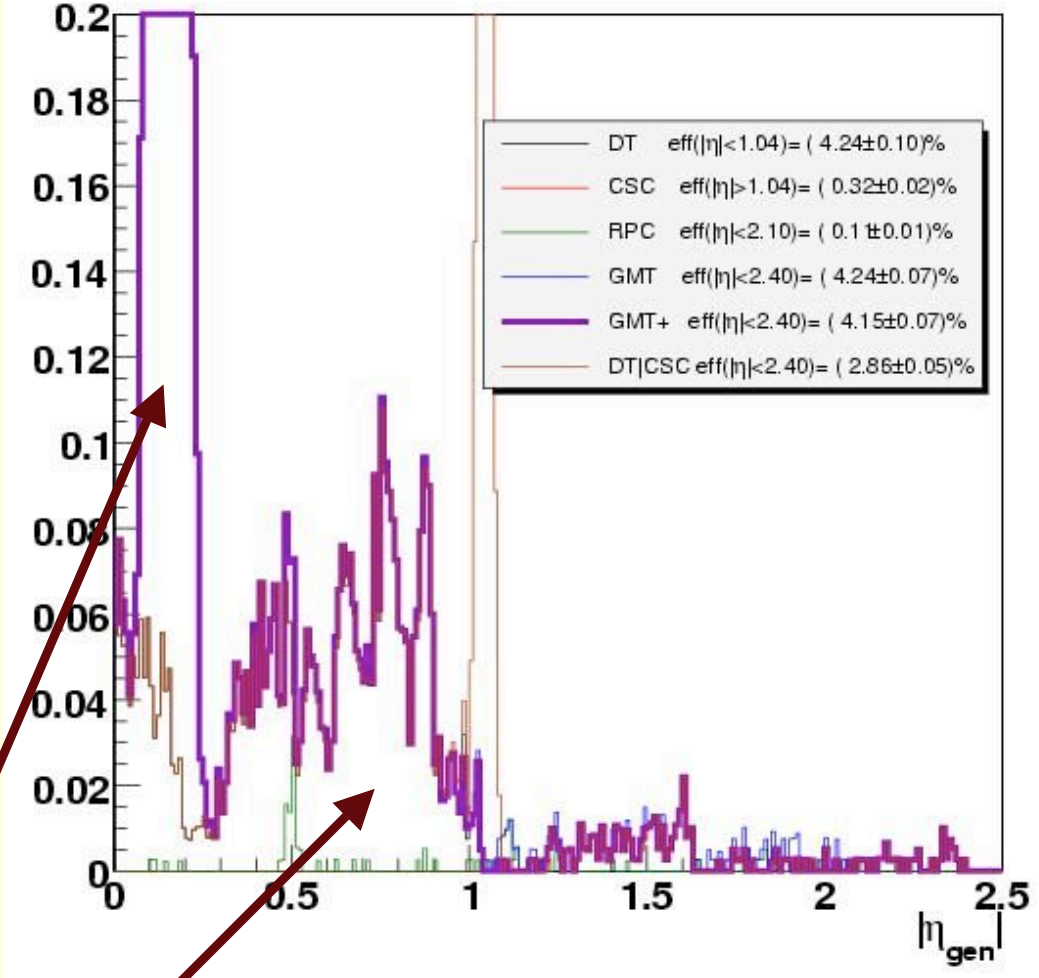
- **Problem fixed also in RPC in 1.2.1! (Tomek Frueboes)**

Ghost probability (before 1.2.0)

ORCA 8.13.0



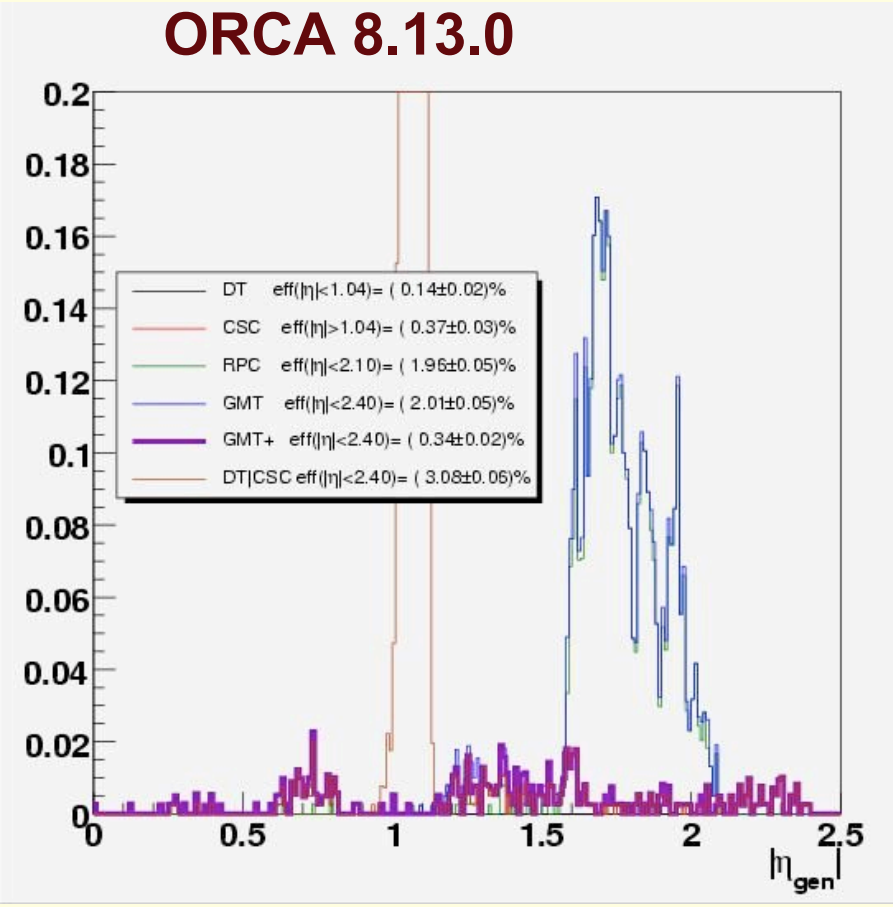
CMSSW 1.2.0.pre4



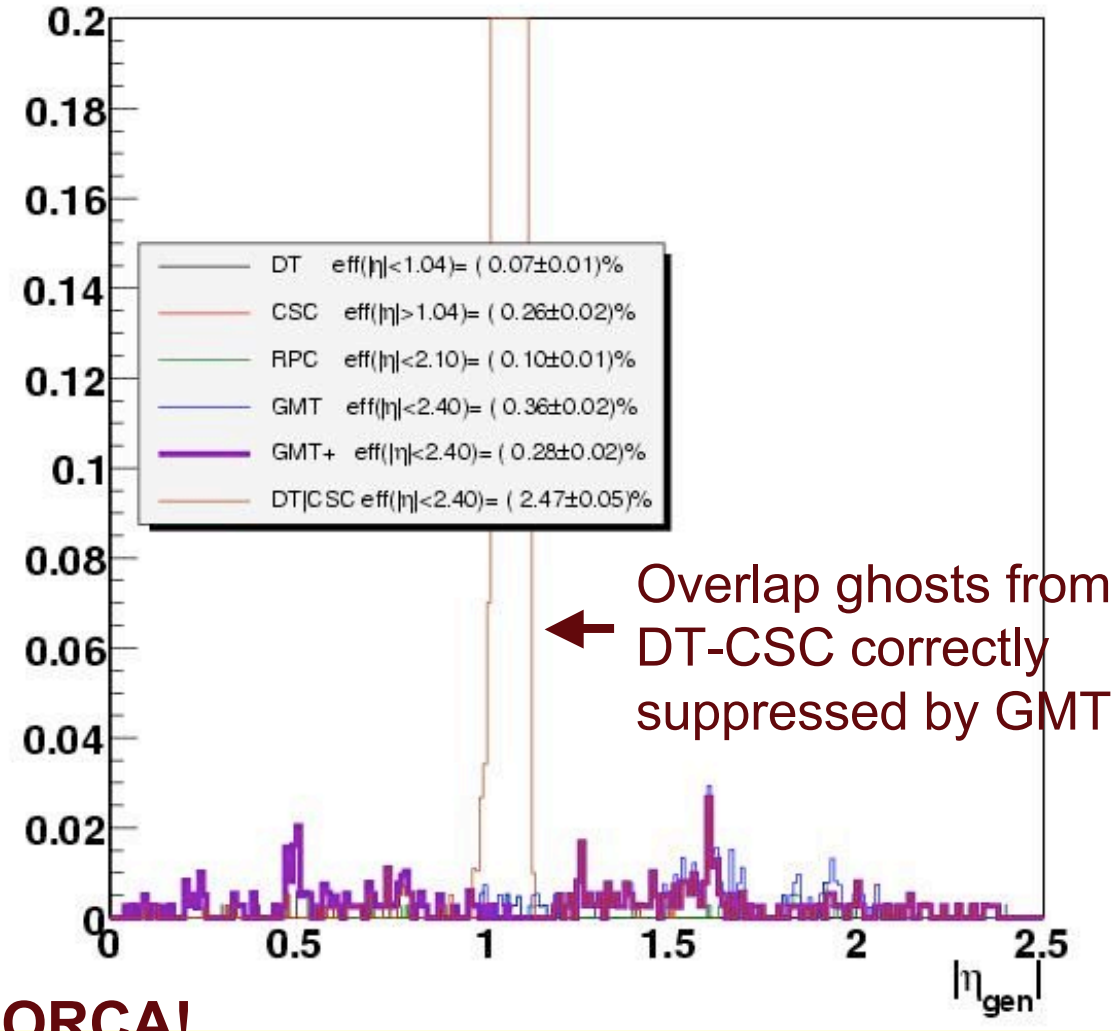
- Ghosts due to wrong RPCb eta
- High DTTF ghost rate

Ghost probability now

ORCA 8.13.0



CMSSW 1.2.1

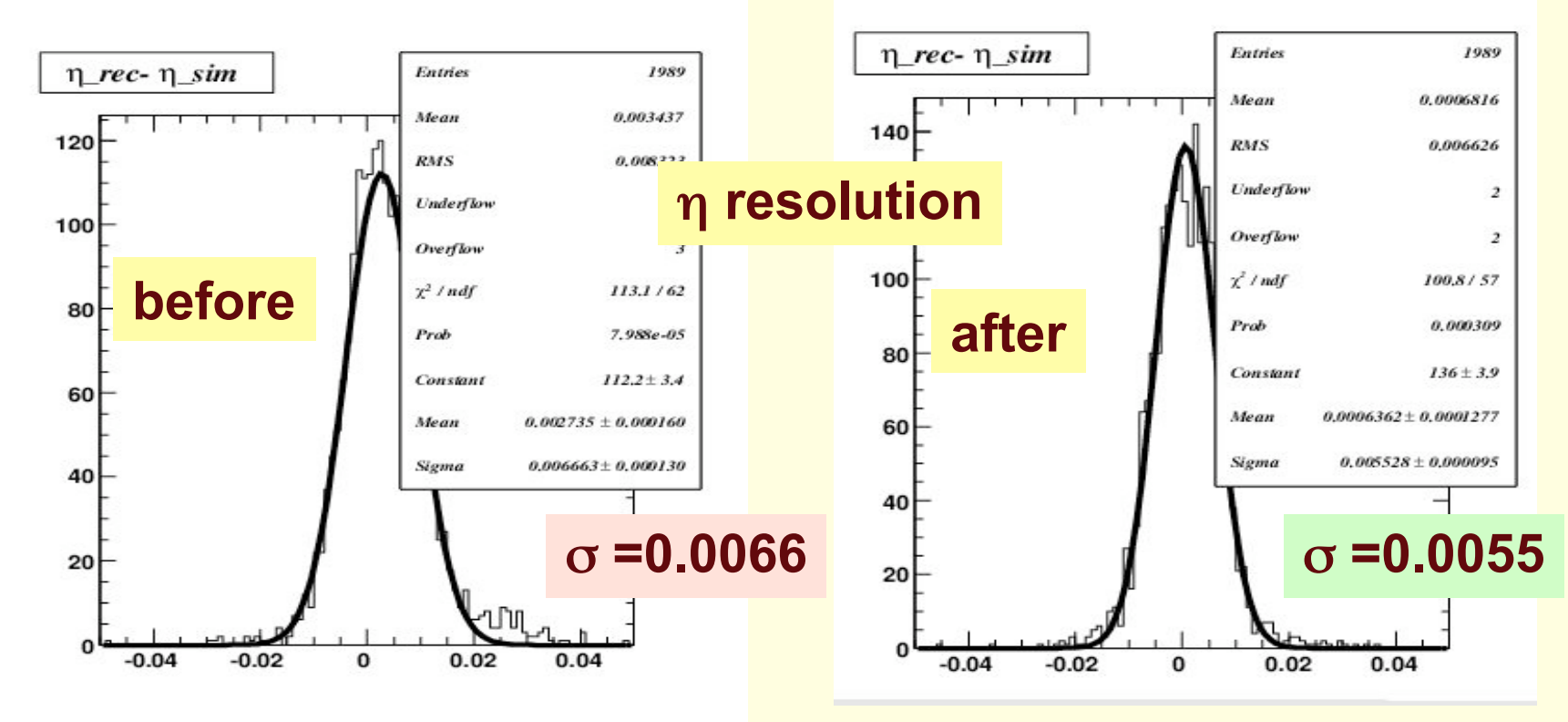


Overlap ghosts from DT-CSC correctly suppressed by GMT

- **Situation now better than in ORCA!**

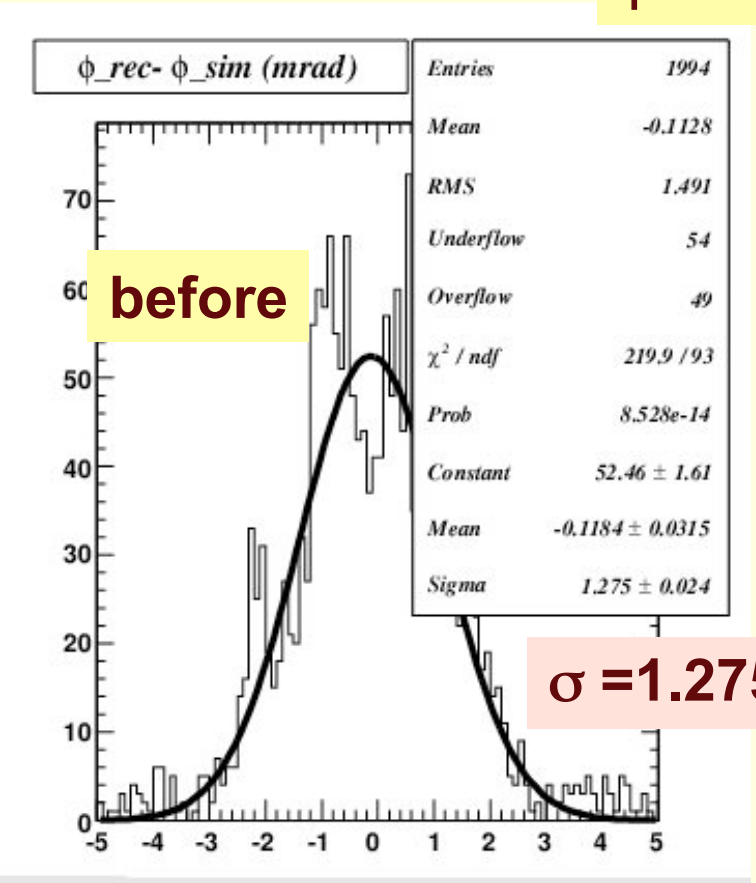
Progress on CSCTF pT resolution

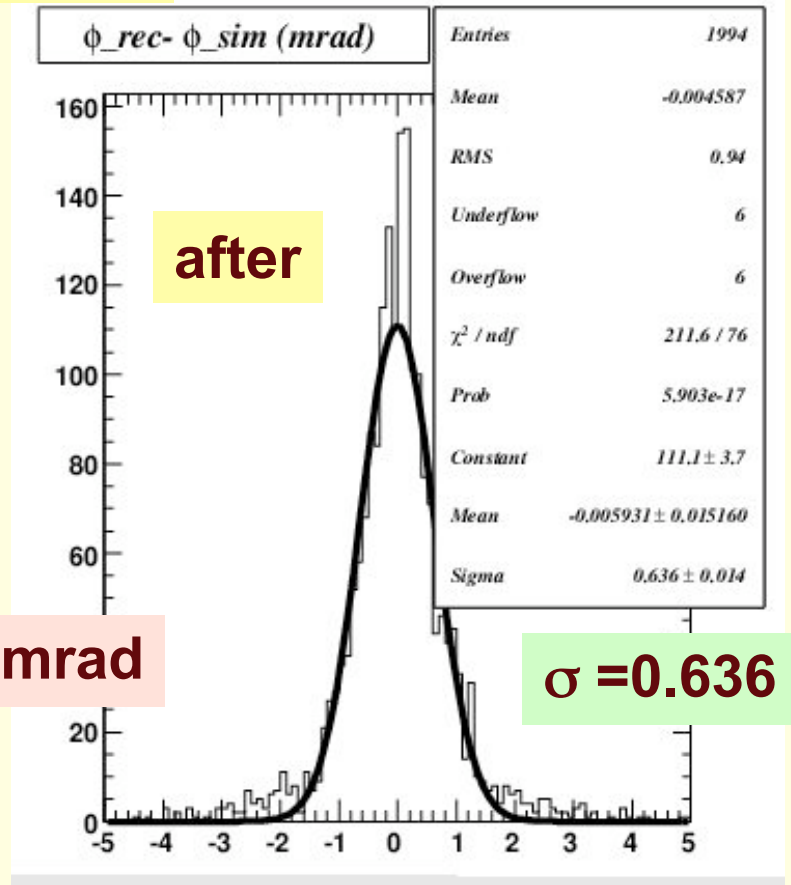
- Intensive recent work by Slava Valuev, Lindsey Gray and Mingshui Chen
- Bugs have been found in the decoding of CSC TP's by CSCTF
- Bug fixes have been tested at the stub level and the resolution now reaches the ORCA values



Progress on CSCTF pT resolution

ϕ resolution



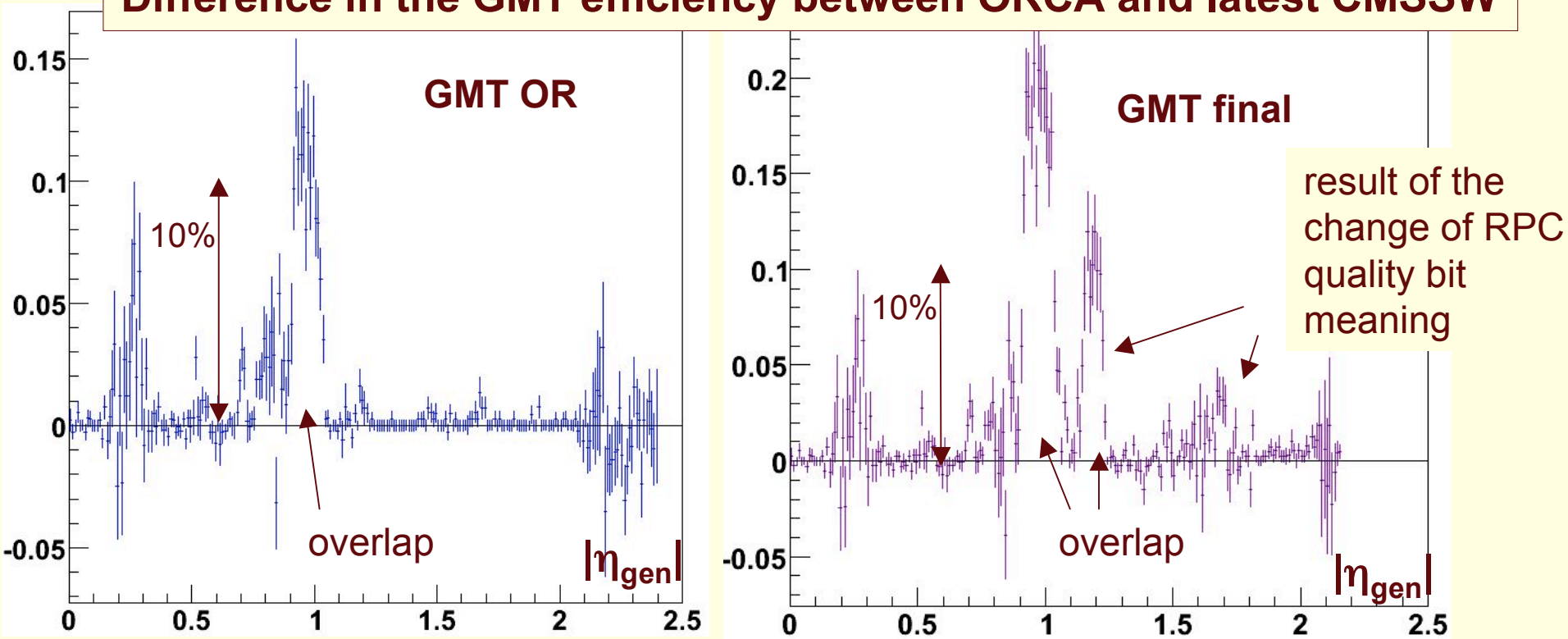


- **Very significant improvement esspecially in ϕ! - Important for p_T measurement by the Track Finder**
- **To release the fixes a few day work is needed (need another 1_2_x release!)**

Efficiency

Getting very close to the ORCA performance!

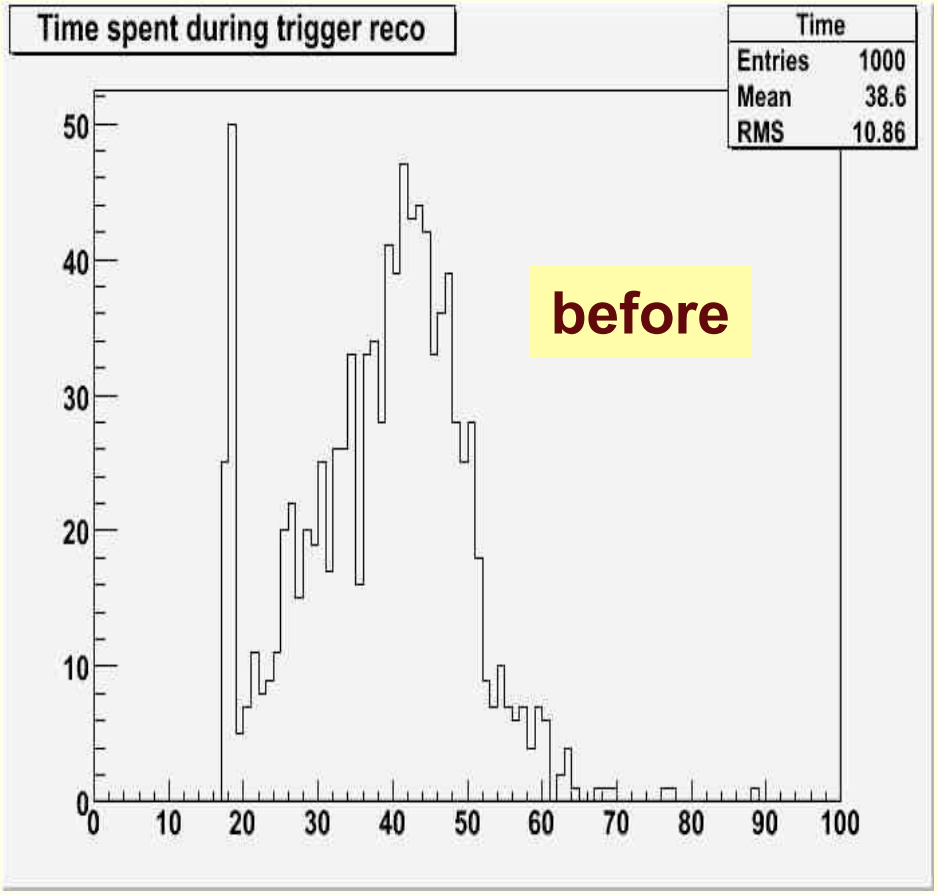
Difference in the GMT efficiency between ORCA and latest CMSSW

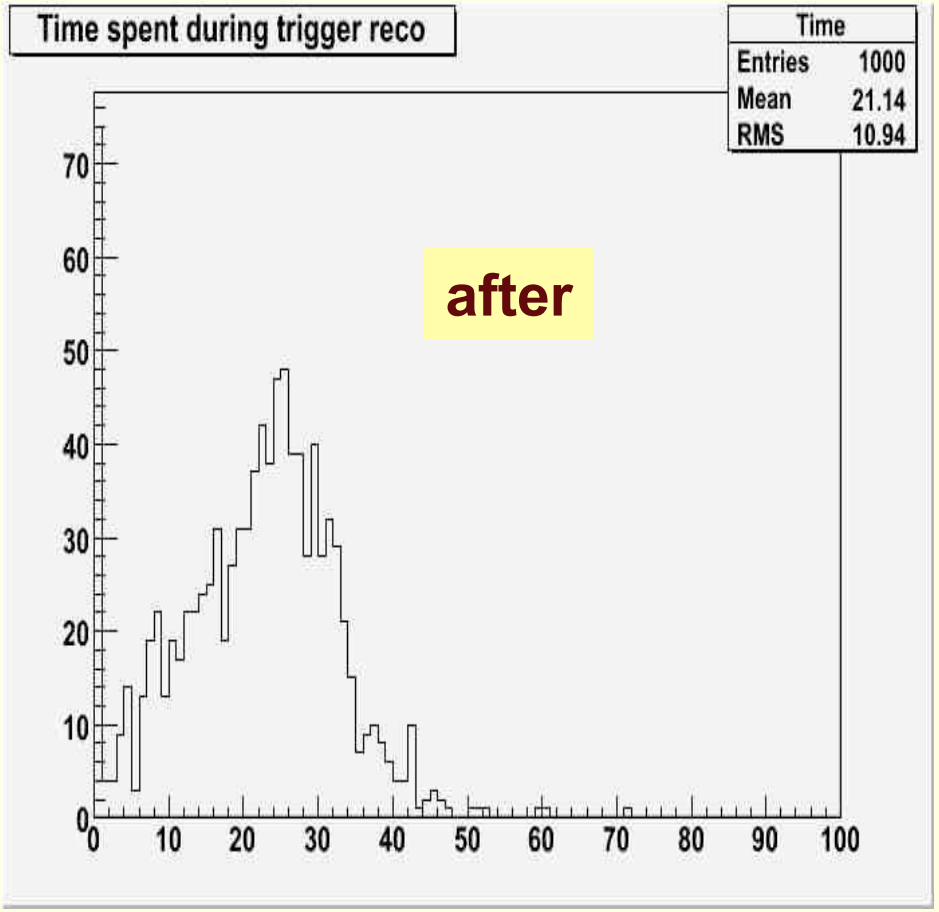


- **Work on the DTTF-CSCTF exchange (Lindsey Gray, Jorge Troconiz) is in the final stage - could be included in a release until next week**
- **In forward region the "GMT final" decision has to be retuned to adapt to the reinterpretation of the RPC quality bits and profit from reduced noise**

Timing

- First timing measurements made by Muriel Vander Dockt: http://cern.ch/muriel/MinBias.html
- First reaction by DT TPG (Carlo Battilana) - improvements will be implemented in one of next releases:





Summary

- RPC eta measurement fixed in CMSSW 1.2.1
- DTTF ghosts fixed in 1.2.0
- Intensive recent work done to improve the CSCTF p_T resolution and CSCTF-DTTF data exchange. Problems have been practically fixed. Few days work needed to reach a release ready code: this would allow to practically reach the ORCA performance - if wanted for 1.2.x we would need a new release (1.2.3) for the next week.

Work to do:

- Need to add GMT interface to GCT (MIP/ISO bits)
- Work on unpackers and DQM to continue
- Configuration database is being setup and filled (from the online side) - need to work on Event Setup modules to access the database from the emulator and replace hardwired and .cfg configurations with db information