



CSCTF status report

By Anna Kropivnitskaya

- CSCTF Pt assignment plots for approval
- Quality definition for overlap region CSC-DT
- Conclusion

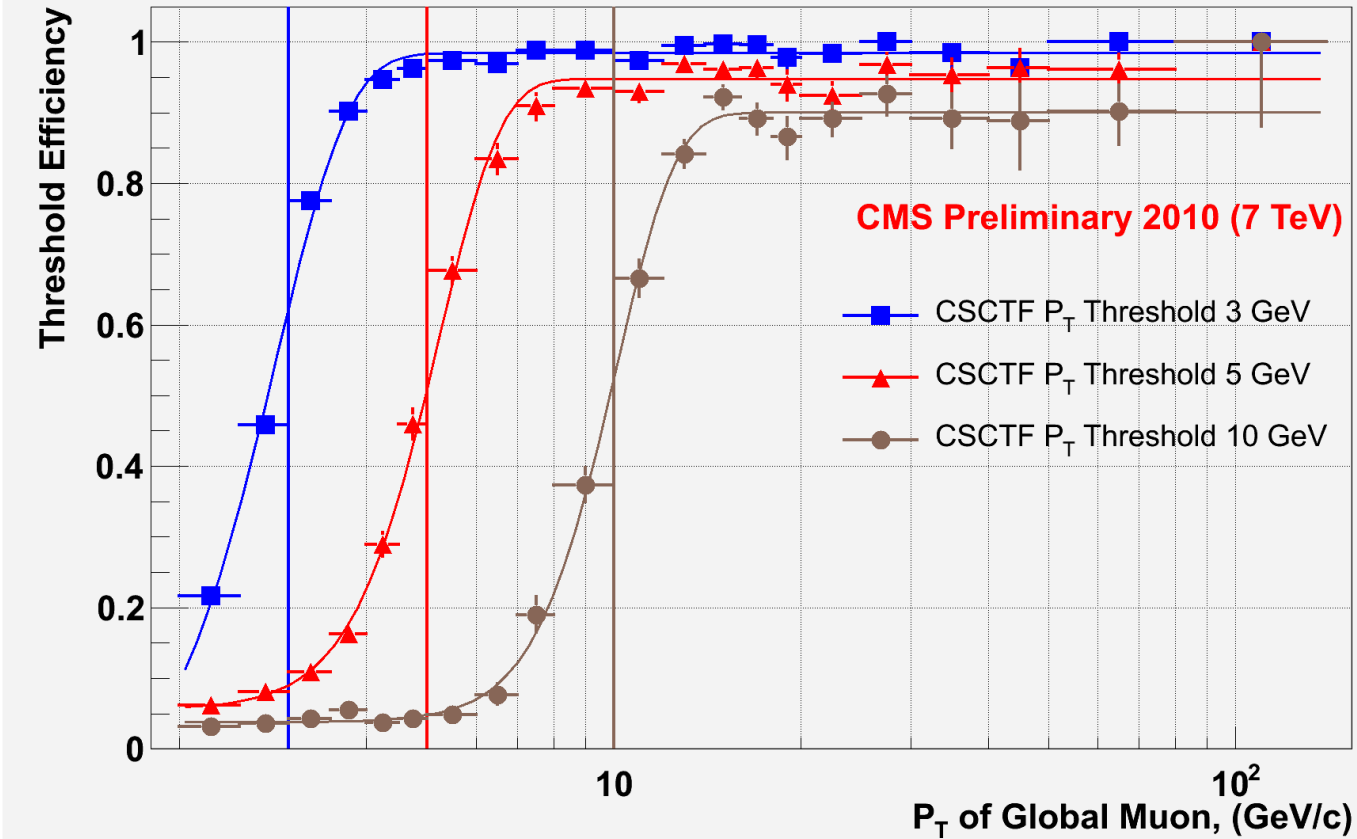
CSCTF Pt assignment plots for approval

- ✓ CSCTF P_T assignment threshold efficiency for golden eta region: $1.2 < \eta < 2.1$
- ✓ Contact: Anna Kropivnitskay, kropiv@cern.ch
- ✓ Results for collision runs after technical stop: 146644 - 147115
- ✓ CMSSW_3_8_3 with official Prompt Analysis code: /UserCode/L1TriggerDPG/
/Commissioning/RECO/PromptReco-v2/
- ✓ GOODCOLL + Good Vertex + CSC skim
- ✓ Use only global muon for threshold efficiency calculation:

$$\varepsilon(P_T^{global}) = \frac{N_{P_T^{CSCTF} > threshold}^{global}(P_T^{global})}{N^{global}(P_T^{global})}$$

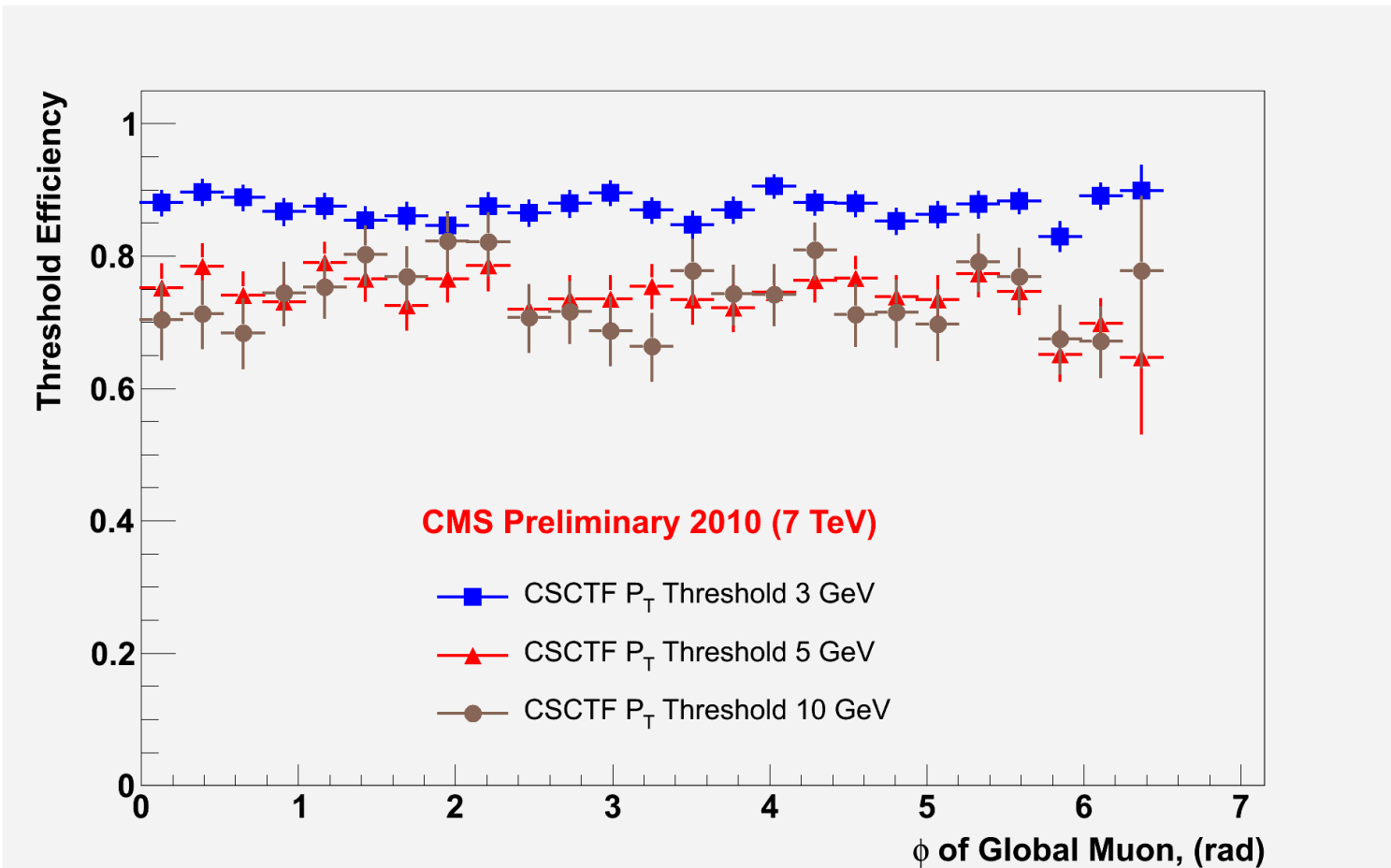
$$\varepsilon(\eta(\varphi)^{global}) = \frac{N_{P_T^{CSCTF} > threshold \& \& P_T^{global} > threshold}^{global}(\eta(\varphi)^{global})}{N_{P_T^{global} > threshold}^{global}(\eta(\varphi)^{global})}$$

CSCTF Pt assignment plots for approval

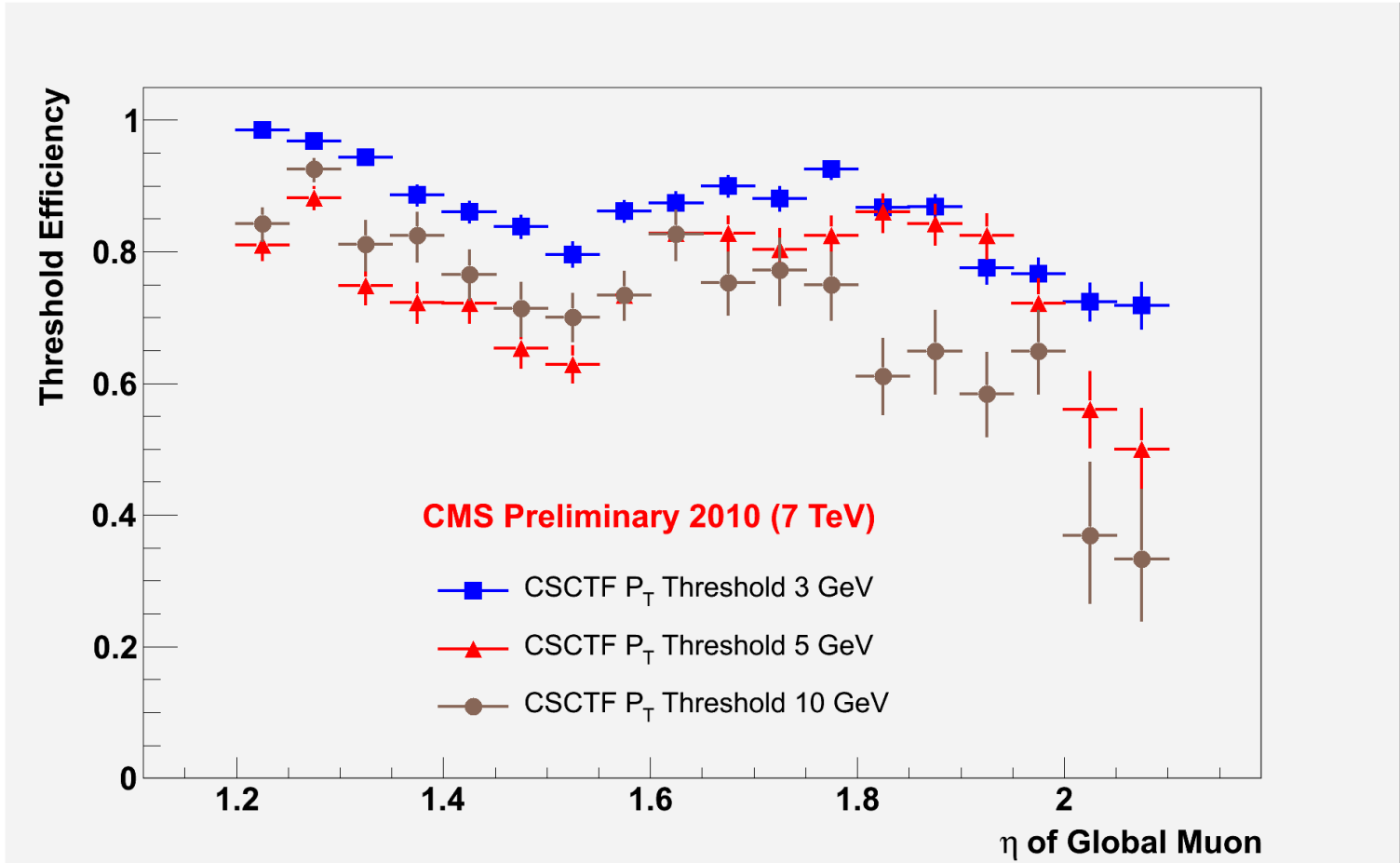


Fit function: $p0 * \text{Erf}(p1 * x - p2) + p3$

CSCTF Pt assignment plots for approval



CSCTF Pt assignment plots for approval



Quality definition for overlap region CSC-DT

Quality definition in overlap region now:

DT - ME1 - ME2 CSCTF Quality = 3

DT - ME2 CSCTF Quality = 2

ME1-ME2 CSCTF Quality = 1

CSCTF group proposal is to live quality definition like it is

1. Zoltan make nice presentation about improvement in the overlap region for recent runs at Muon HLT meeting 1 Oct. (see next slide):

<http://indico.cern.ch/conferenceDisplay.py?confId=107981>

So efficiency if overlap region is about 80 % now what is about 10% inefficient compare to over region.

For the whole CSC it is very small inefficient contribution.

2. Monte Carlo is fixed now for data after technical stop and we expect rather good agreement with selected data.

In case of disagreement we are planning to understand this deviation and fix it.

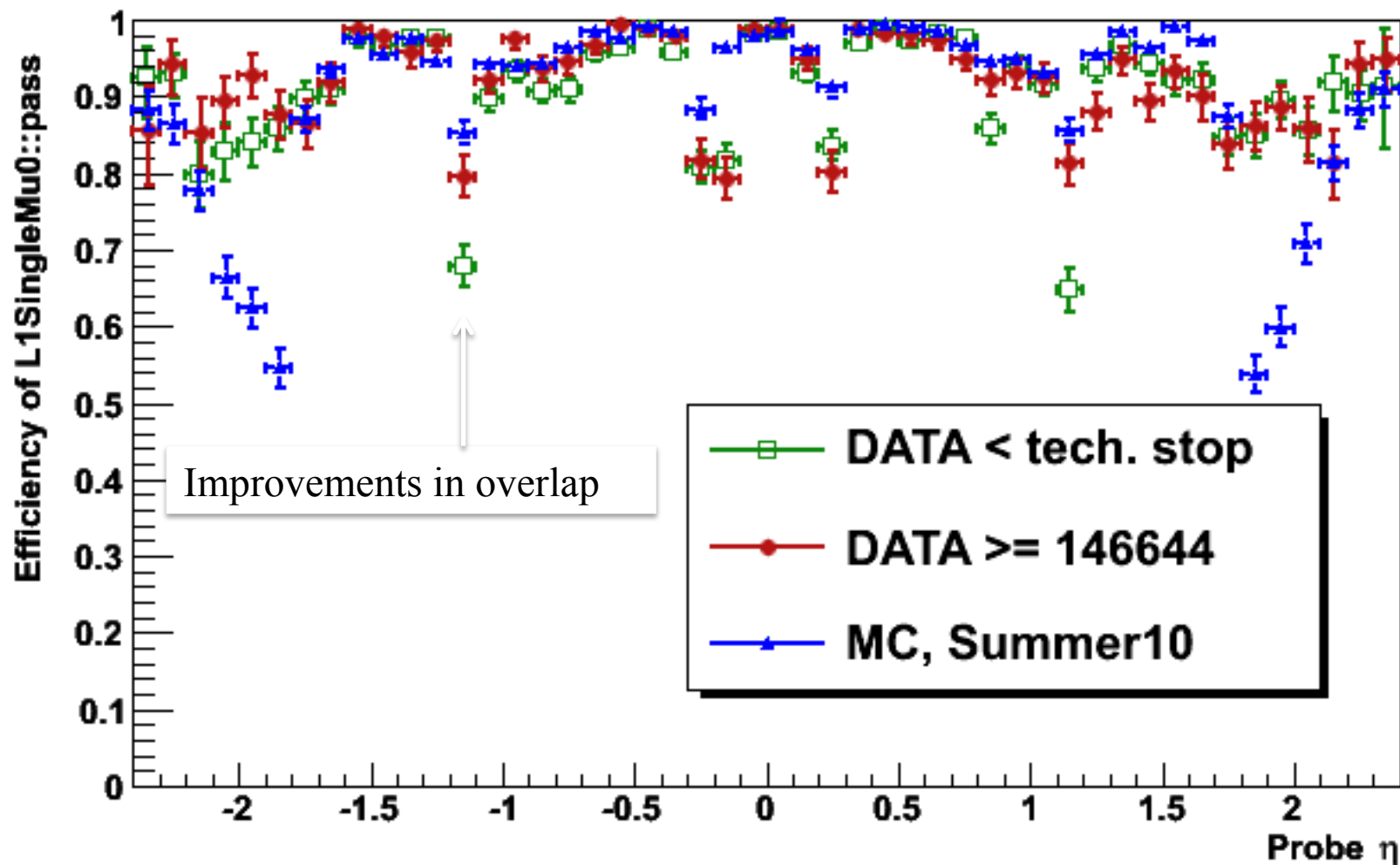
So if we change quality definition right now then we gain a little bit in efficiency but it become more difficult for ordinary people to analyze new data.

It is difficult to follow all changes at trigger without correct Monte Carlo and information.

L1SingleMu0

pair_drM2_bin0 & pt_bin0 & TM_pass & TQ_pass & tag_MuX_TrackY_Jpsi_MU_pass

Zoltan



Conclusion and Plans

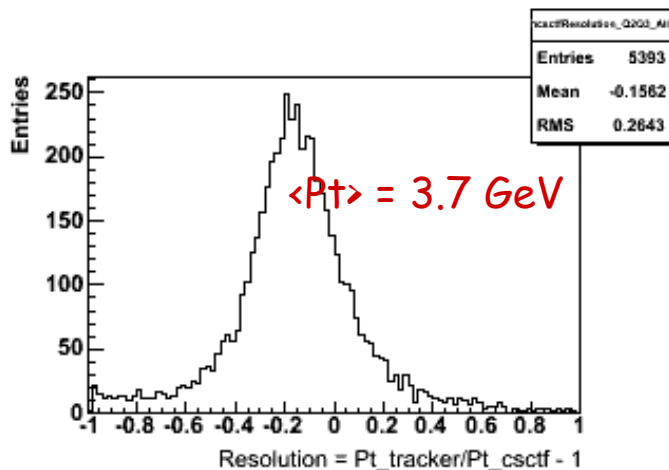
- PT assignment for CSCTF in golden eta region for approval is presented
- CSCTF group proposal is to live quality definition like it is for overlap region

Back up slides

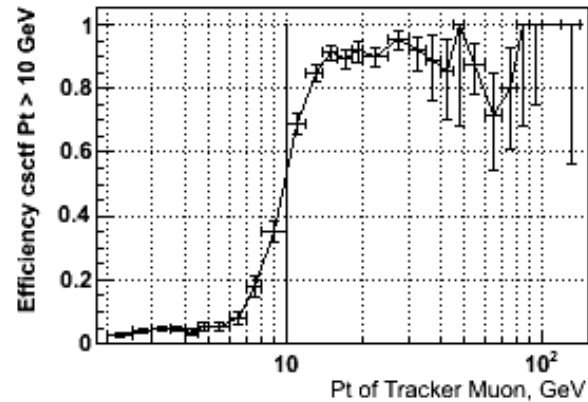
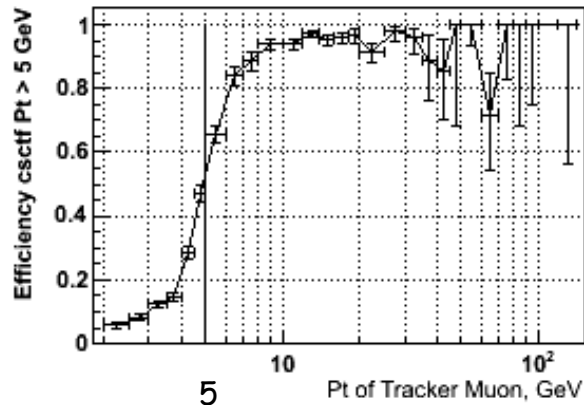
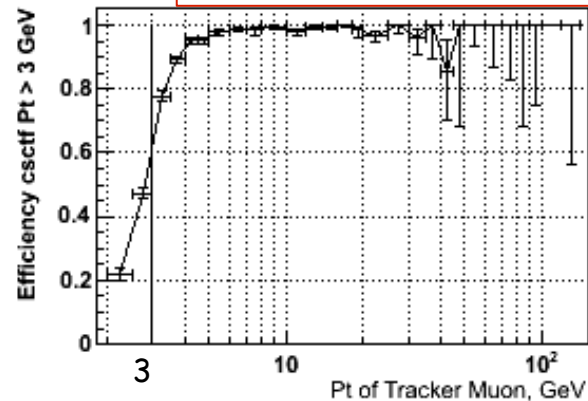
Collision Data Selection

- ✓ Results for runs after technical stop and after Greg's timing changes at 17.08.2010 (CSC ELOG [439293](#))
 - run 146436 before 25.09.2010, DT delay changes
 - runs 146/: 644, 710, 713, 715, 728, 804: after 25.09.2010, DT delay changes
- ✓ CMSSW_3_8_3
with official Prompt Analysis code: /UserCode/L1TriggerDPG/
- ✓ /Commissioning/Run2010B-MuonDPG_skim-v2/RAW-RECO for run 146436
/Commissioning/RECO/PromptReco-v2/ for other runs
- ✓ **GOODCOLL + CSC skim:**
 - BPTX Coincidence (0 AND (40 OR 41) AND NOT (36 OR 37 OR 38 OR 39) AND NOT ((42 AND NOT 43) OR (43 AND NOT 42)))
 - Good Vertex ($ndf \geq 4$, $|z| < 15$ cm, $|r| < 2$ cm)
 - no scraping beam background rejection requiring $\geq 25\%$ of high purity tracks
- ✓ Here BX plots for CSCTF track not for event
(so if we have several tracks in event then histograms fill several time)

PtLUTs at Point 5: Q2&Q3, $1.2 < |\eta| < 2.1$



Runs after DT delay changes



- + Good resolution ($\sim 26\%$) and threshold efficiency for golden region of eta
 - Threshold efficiency start for the threshold Pt cut less than 0.9 (should be investigated)
- Most tracks in the golden eta region is 3 stations with Station 1-2-3

ME11a structure

ME1/1 view (from CMS IN-2007/024)

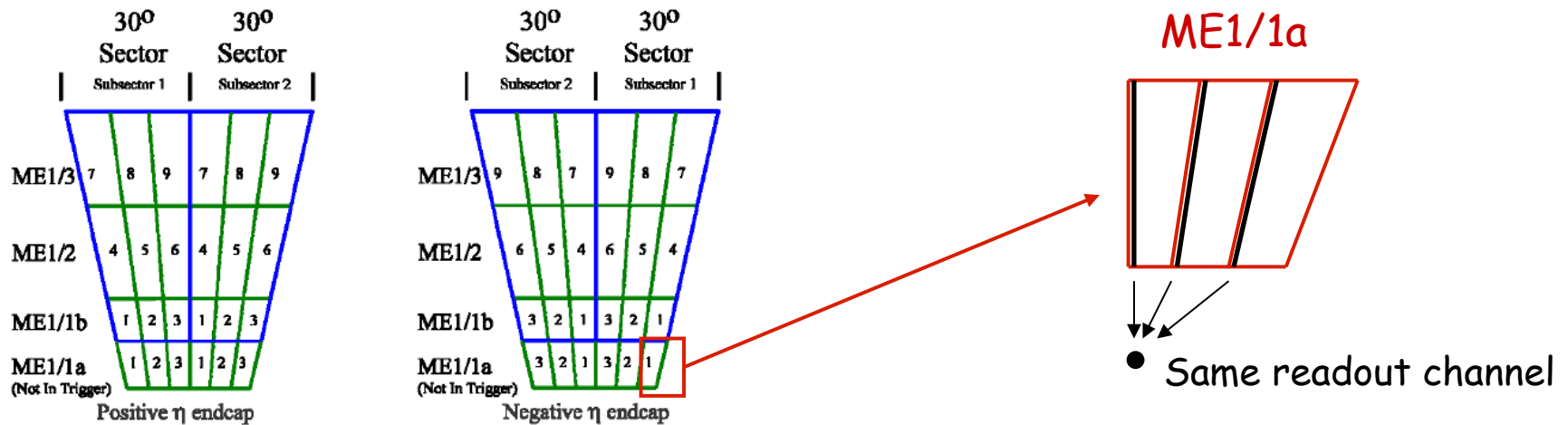
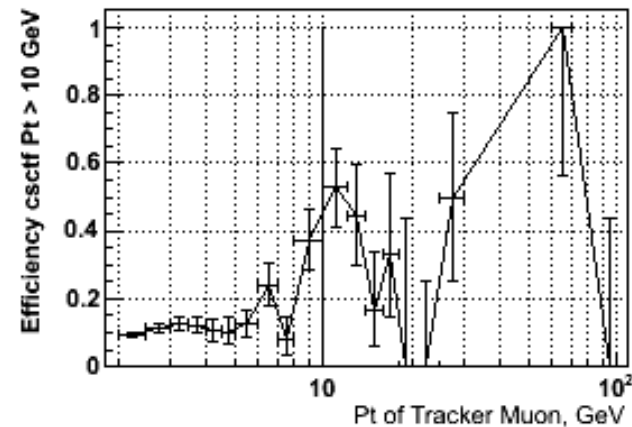
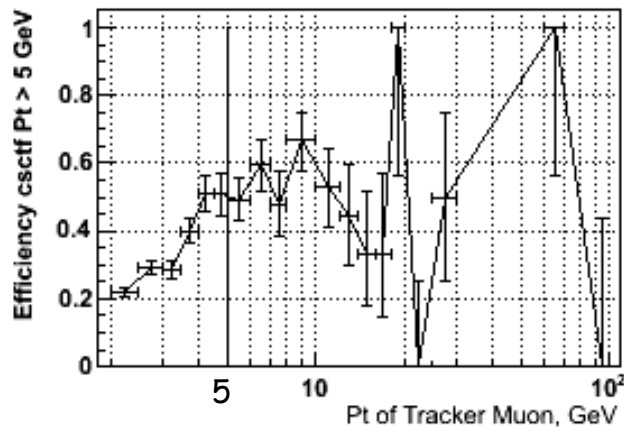
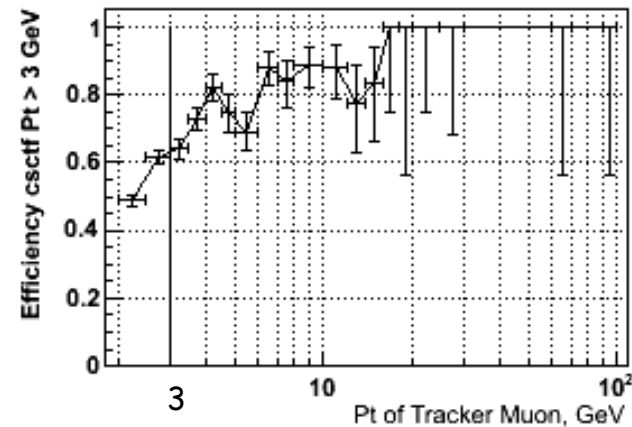
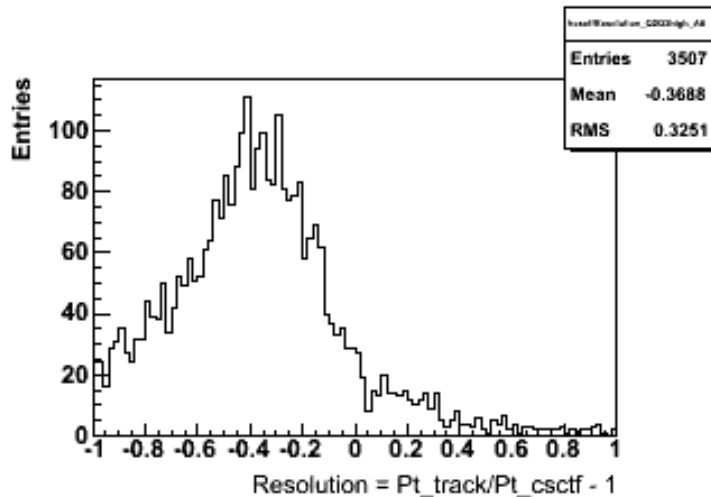


Figure 9. Numbering of CSC chambers within ME1 trigger sectors, as viewed from the IP.

- The 48 strips of ME1/1a are ganged 3:1 in 16 readout channels
- e.g. strips 1 (2), 17 (18) and 33 (34) are ganged together into the 1st (2nd) readout channel
- In the CSCTF LUTs the ϕ value is shifted to the middle of the CFEB
- We will mistake the ϕ assignment at most by 1/3 (with the older assignment up to 2/3)

PtLUTs at Point 5: Q2&Q3, high $|\eta| > 2.1$

Runs after DT delay changes

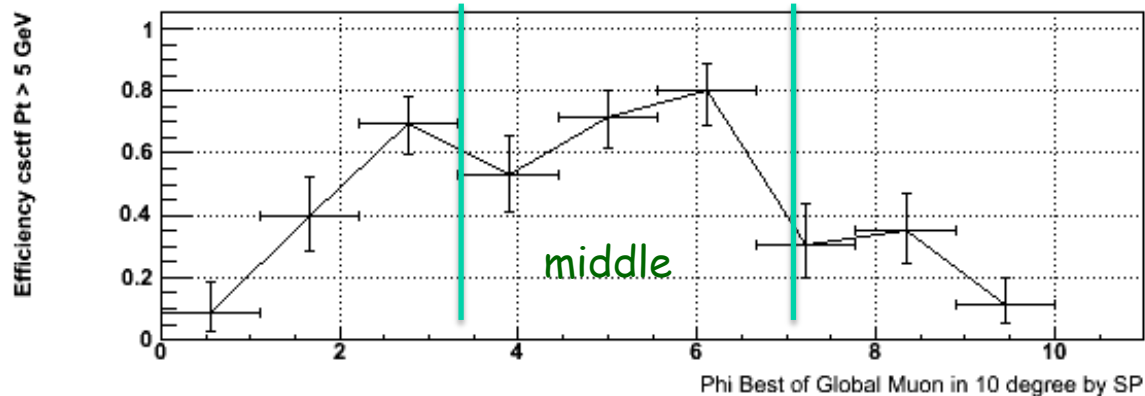
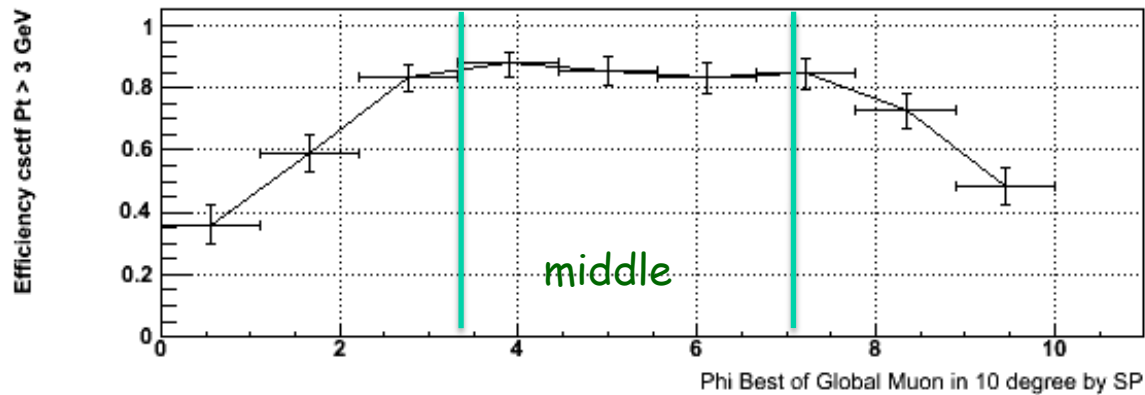


Resolution ($\sim 32\%$) and high threshold efficiency in high eta region
Bad resolution due to 3 links reading from ME11a

PtLUTs at Point 5: Mode2 (1-2-3), high $|\eta| > 2.1$

$$\text{Phi} = \text{fmod}([\text{Phi_global}-15], 10)$$

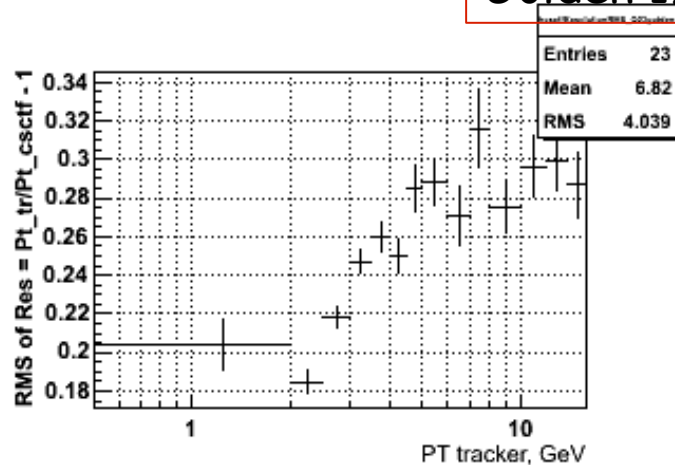
Runs after DT delay changes



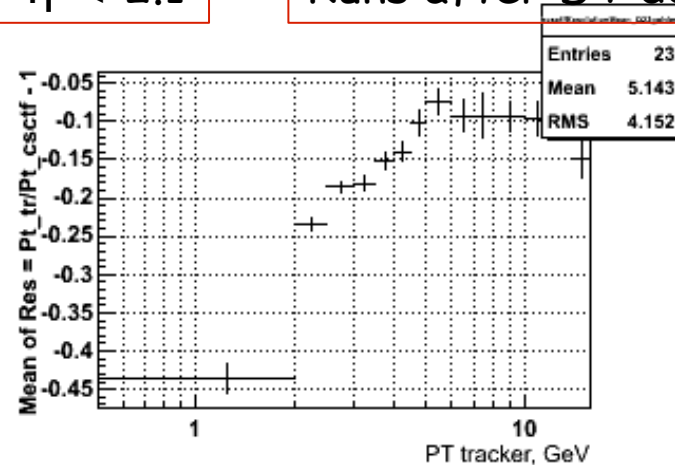
- ✓ Threshold efficiency is significantly higher in the middle than at the ages what is expected from merger of 3 links to 1 for ME11a and assign to phi of middle link

RMS and Mean of Resolution for muons Quality = 2 or 3

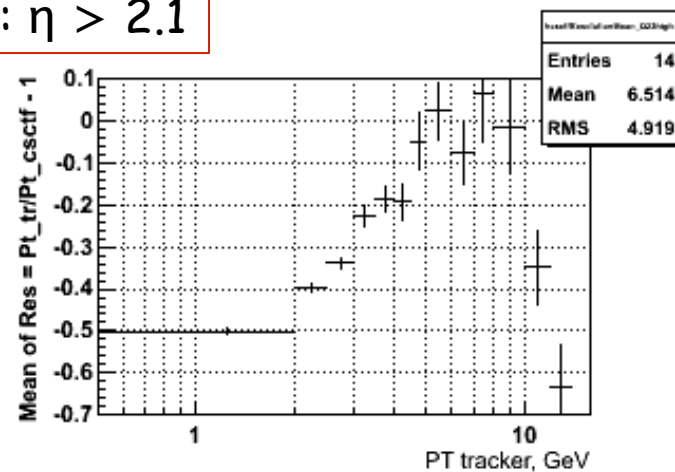
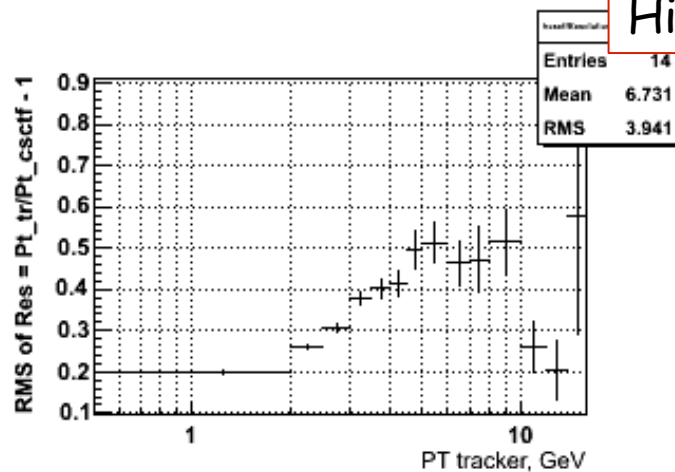
Golden $1.2 < \eta < 2.1$



Runs after DT delay changes



High: $\eta > 2.1$



- ✓ Resolution at golden region is about 20-30%, at high eta region is about 30-50%
- ✓ This resolution could be improved:
 - new tuning with using data
 - take into account reading information from 3 links at once for ME11a case