Calibration with E/p
Update

Luca Brianza

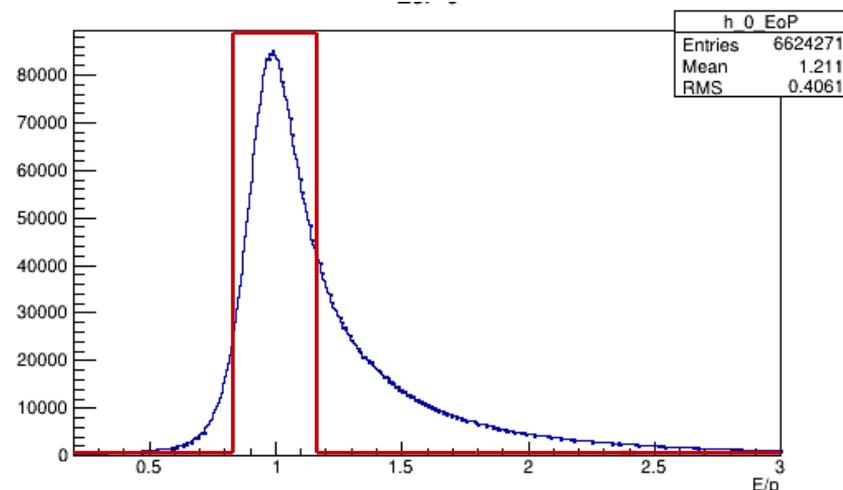### *For Milano Bicocca-Group*

MoCa meeting – 11/06/2015

- Discovered that the "phi-structures" are related to E/p tails

The structures disappear using a step-function instead of the all E/p distribution in the reweigthing of the events

	h_0_EoP	
Entries		6624271
Mean		1.211
RMS		0.4061

If 0.85 < E/p < 1.15 → Weight=1
else → Weight=0

Hint of a bias in the E/p method since the events in the E/p tails are mostly related to a poor estimate of p

<u>Last check needed:</u>
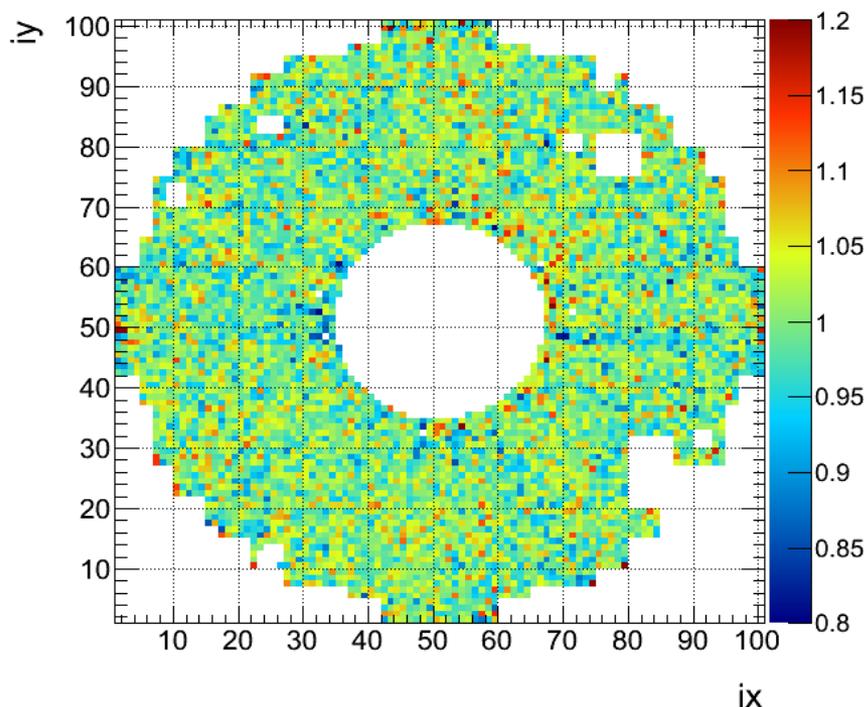verify (using MC) if we are biasing the ICs or we are going closer to the real values
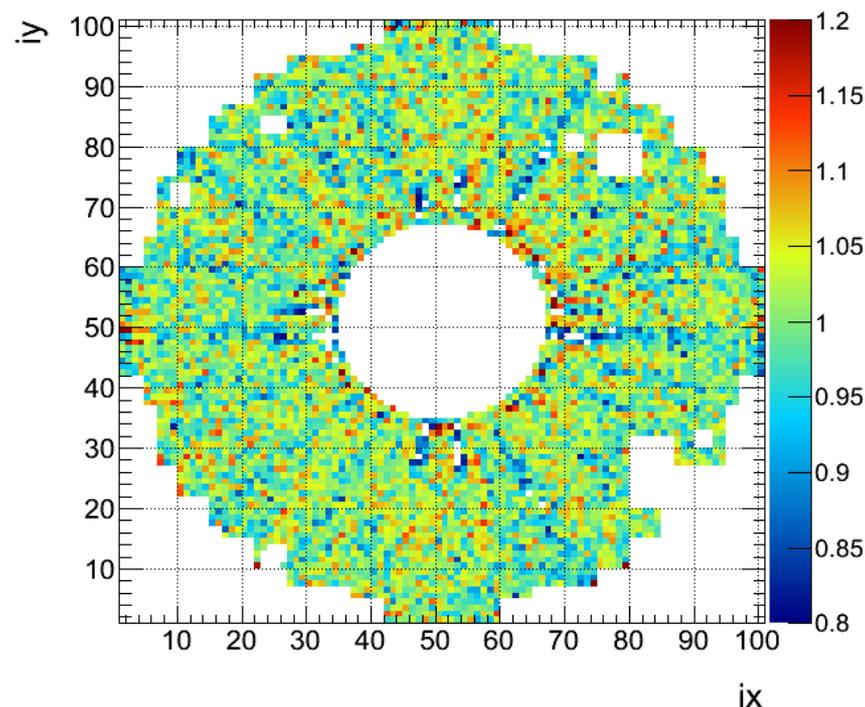
Using a DY sample (ntuples were already available)

DYJetsToLL_M-50_TuneZ2Star_8TeV-madgraph-tarball_Summer12_DR53X-PU_S10_START53_V7A-v1

Only 3.2 M events, **but enough to make some conclusions (see next slides)**

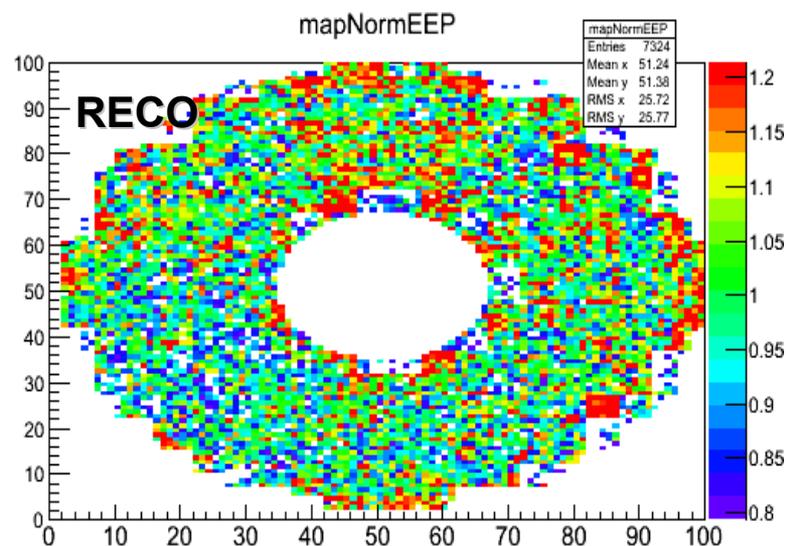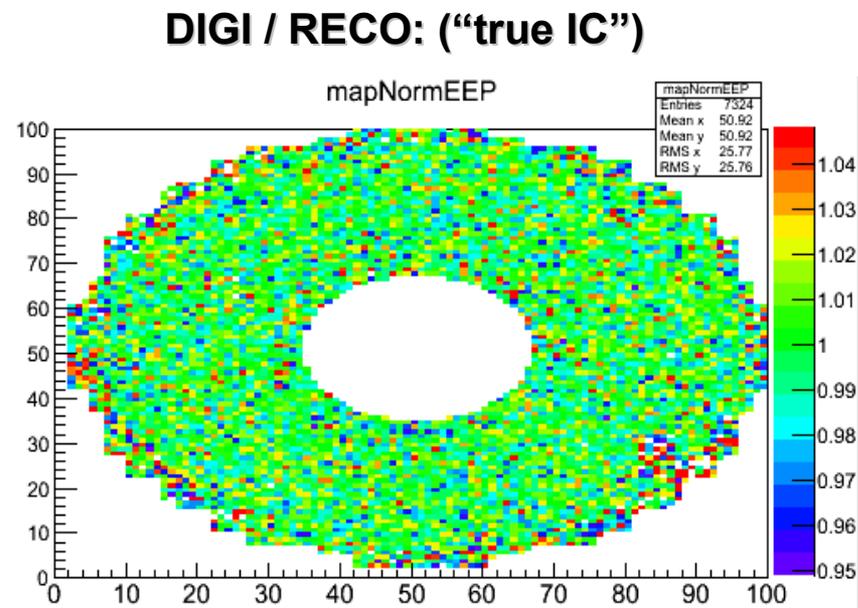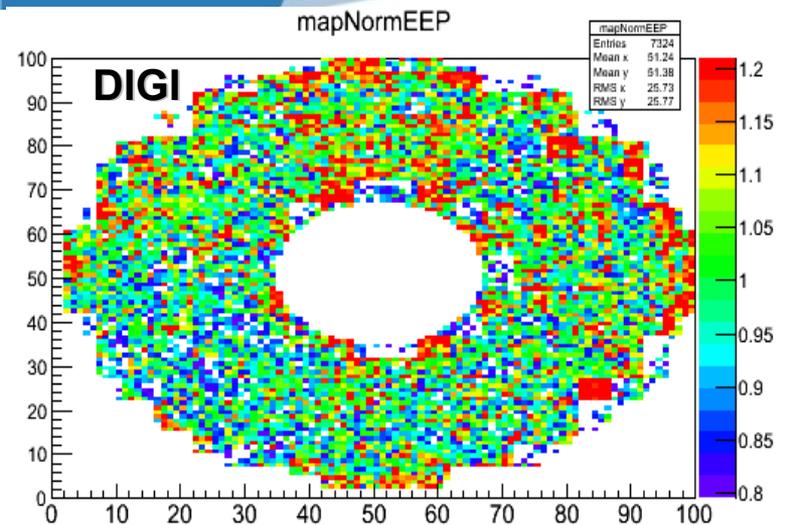**First check** - **MC show the same behaviour of data:**

Calibration with the step-function

Calibration with the all E/p distrib.

Take the ICs used in the digi and the reco of the MC:

DIGI / RECO: ("true IC")
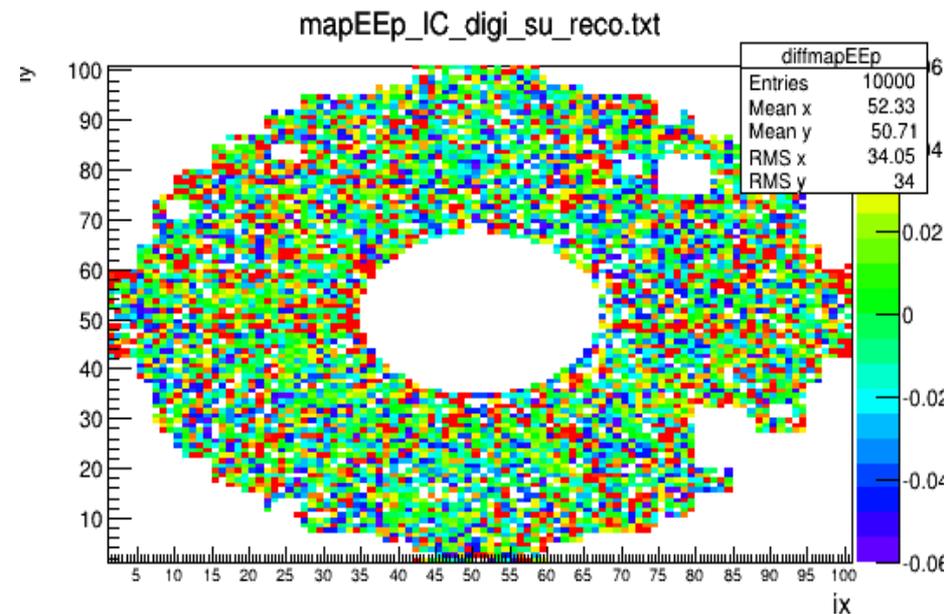

TARGET:

Compare **IC derived with E/p** (which are "corrections" to RECO IC)

against **"true" IC**

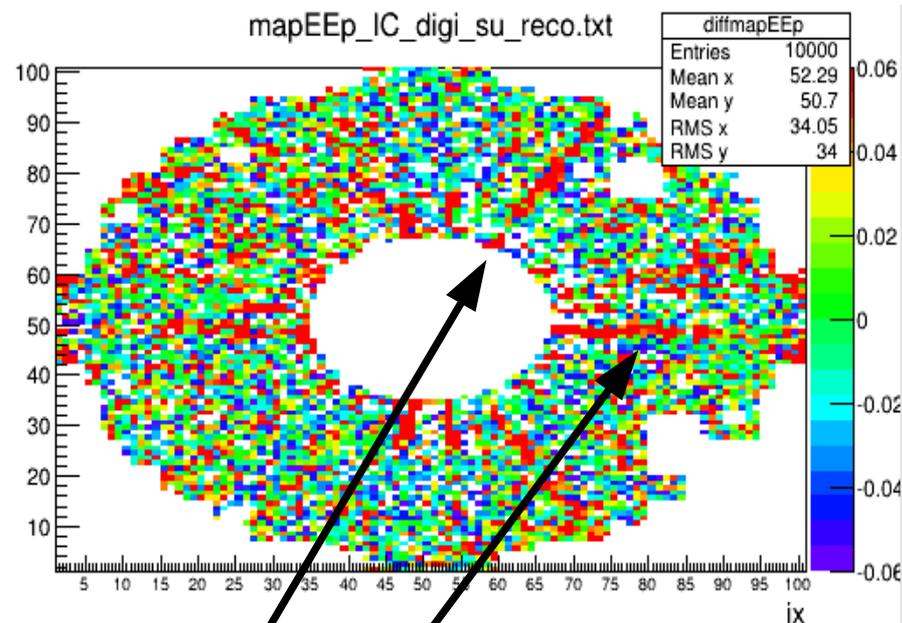→ see if we are getting closer or not

Quantitive results difficult for the low statistics, BUT...

Calibration with step-function

Calibration with all E/p distrib.

With the **step-function**, (IC – ICtrue) look <u>uniform</u>

With the **all E/p distrib**, (IC – ICtrue) <u>shows some structures</u>!!!

→ **this confirms that the algoritm with weights is creating the bias along phi**

MC test:

Confirmation that the phi-structures were artificially created in the E/p algorithm

→ **cause**: events in the E/p tail

→ **solution**:
removing E/p tail in the calibration, using a step-function for the event reweighting

Ongoing:

- study and optimize for different windows in the reweighting

Backup