

# SiW-ECAL

# Reconstruction & Digitization



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# Software

ECAL software is realized in terms of processors written in c++

```
/      Mokka      / Simulated Monte Carlo:  
----- TBCern1006_01_dchxy_new_QGSP_BERT_e-_010GeV_300672_10000evt.???.sclio  
|  
<EVENT::SimCalorimeterHit>  
|  
V  
/           ----- noitarbilaC ----- - - -  
/ Digi /MIPEnergy, /calib /  
/ MIPEnergy = 0.147 MeV <===== esioN =====oo  
----- / 0  
|          | 0 H A M B U R G |  
<EVENT::RawCalorimeterHit>          | 0  
|          | o ~|  
V          | o _|= /  
| 0 |_____| /  
/ SimpleHitSearch ===== Noise =====oo  
/ - - - - - - - - /          |          /  
/ Calibrate *calib <----- noitarbilaC ----- - - - /  
----- |_____ /  
|  
<EVENT::CalorimeterHit>  
|  
V  
/      Analysis      /  
-----
```

2010-06-11

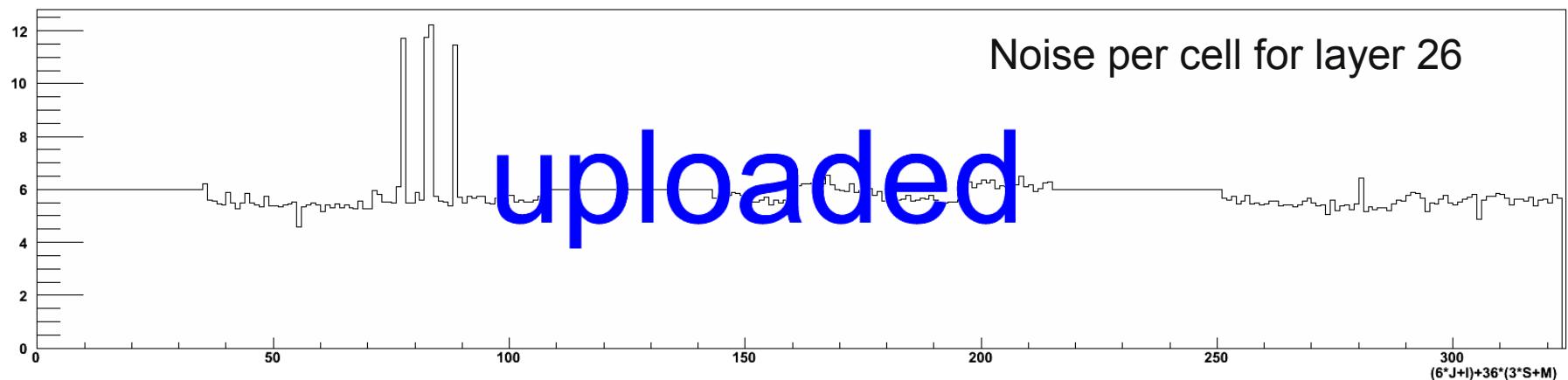
# Noise

Calibration constants and noise are stored in a MySQL database at DESY – Hamburg.

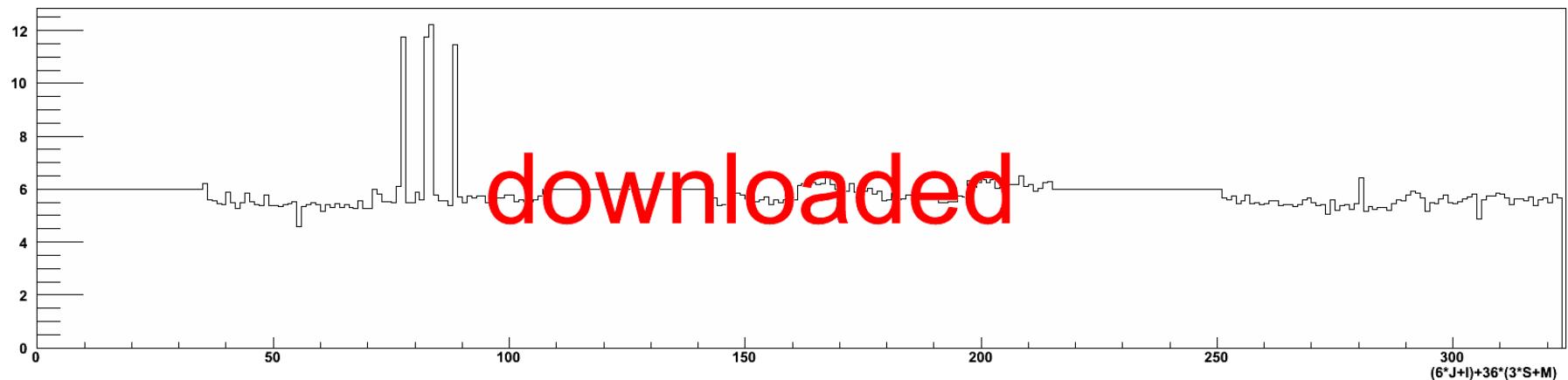
Reconstruction is done on the GRID with access to the MySQL server.

Run dependent noise is used for digitization of Monte Carlo.

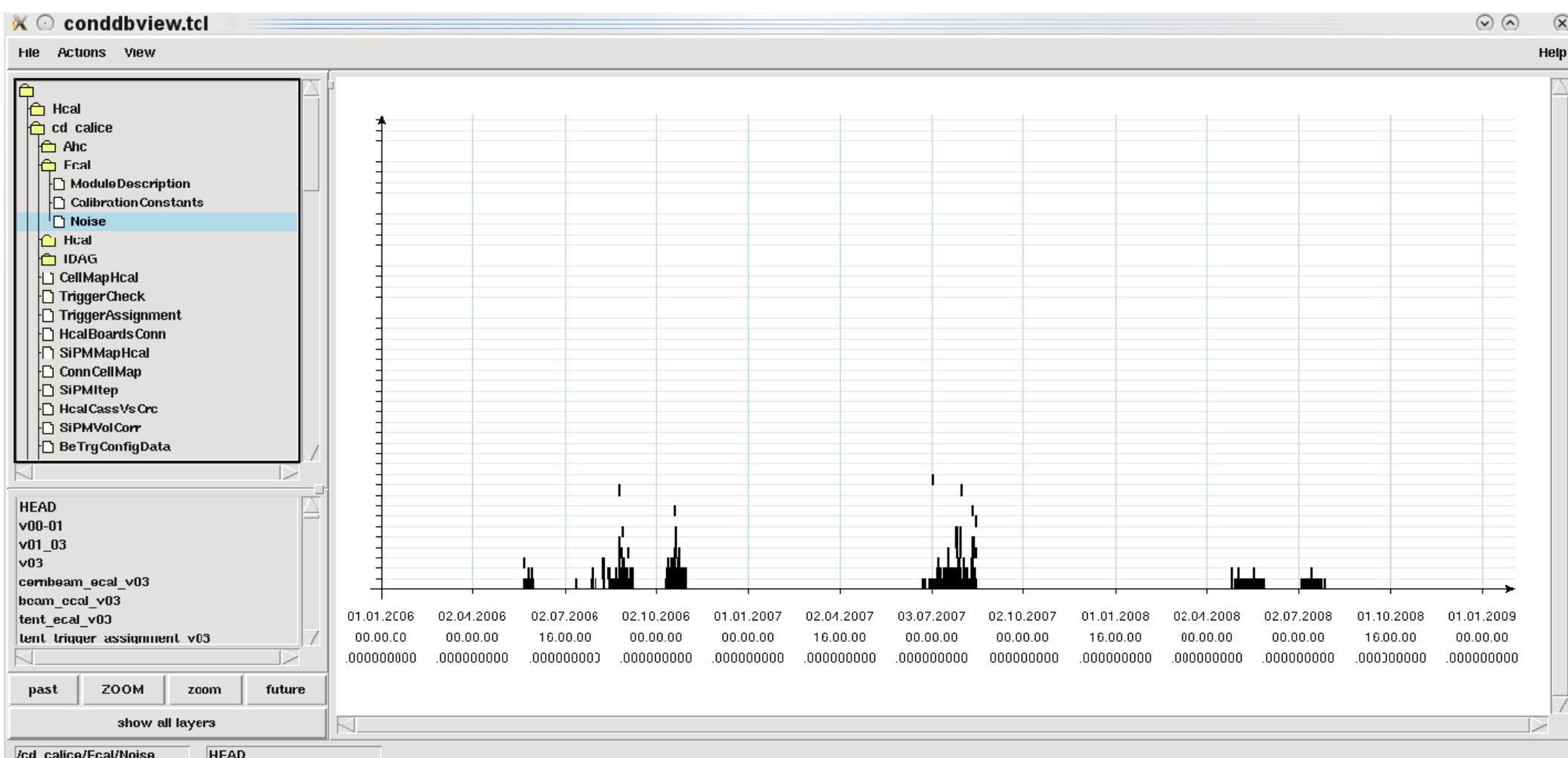
noise 25



noise 25



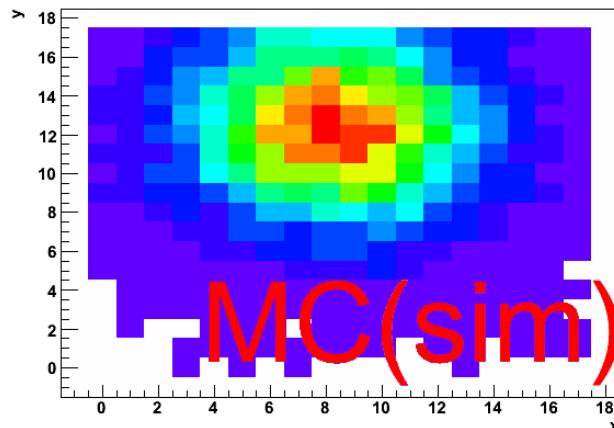
# /cd\_calice/Ecal/Noise



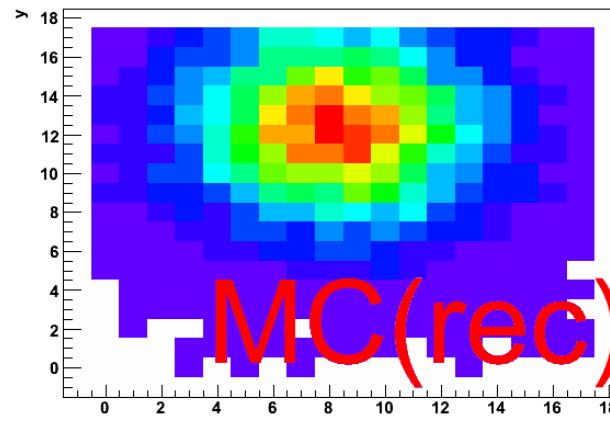
Recently uploaded noise for 2006, 2007 and 2008 data with SiW ECAL

# Digitization

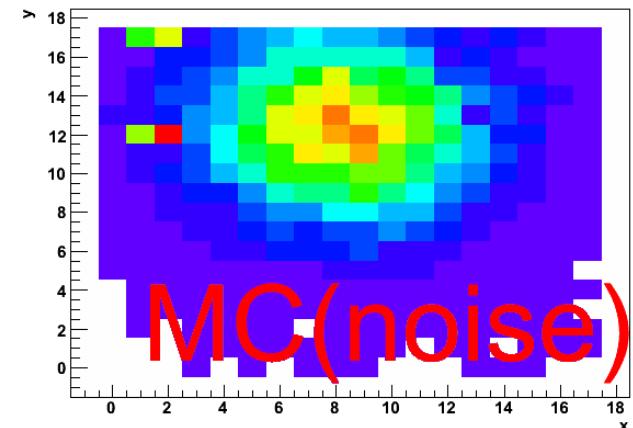
Hit map → number of hits per cell in layer 26  
in a 10 GeV electron run



MC(sim)

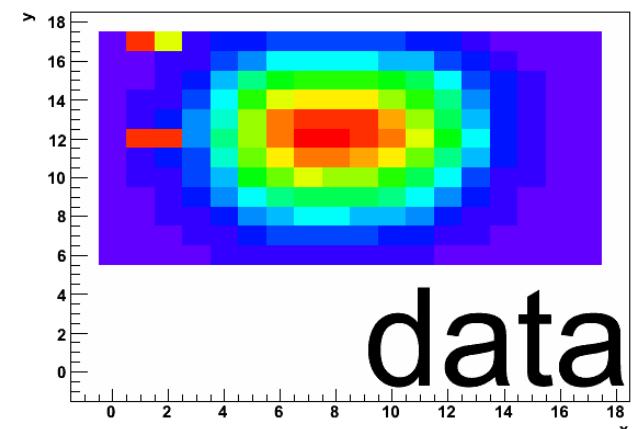


MC(rec)



MC(noise)

Simulation closer to data after real digitization  
Expected to contribute for better agreement

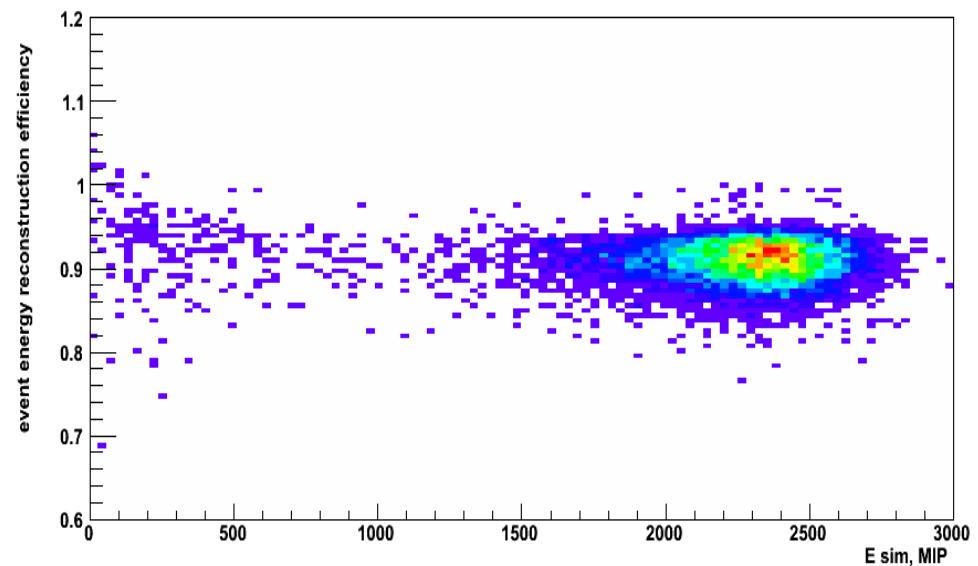
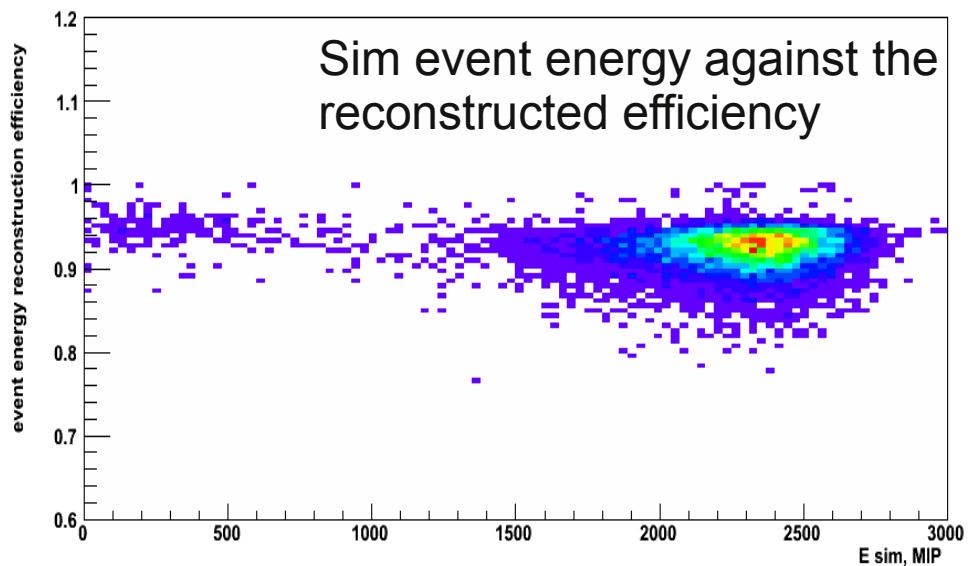
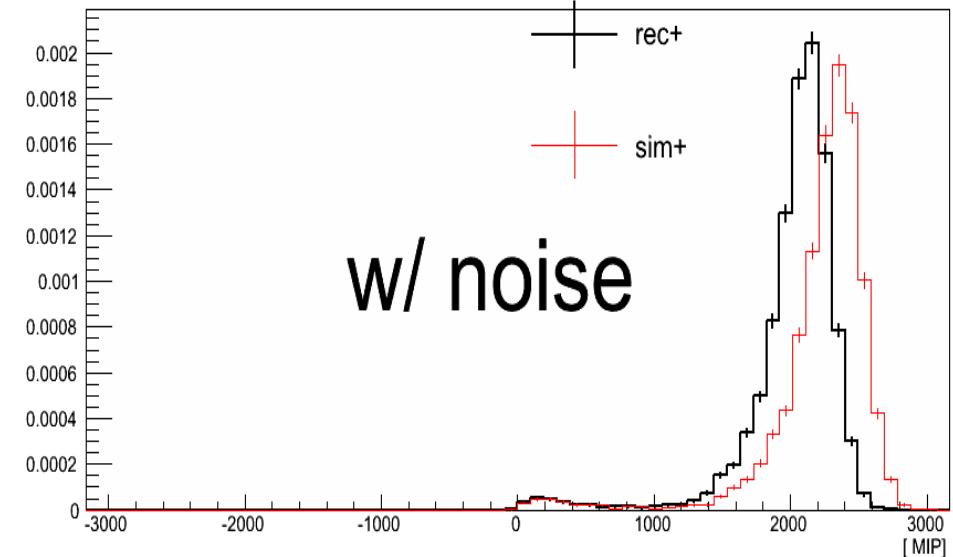
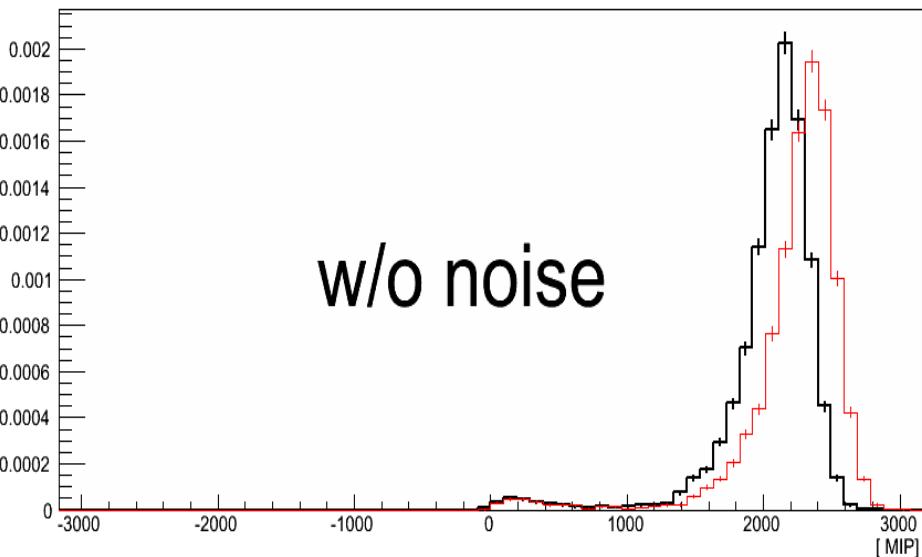


data

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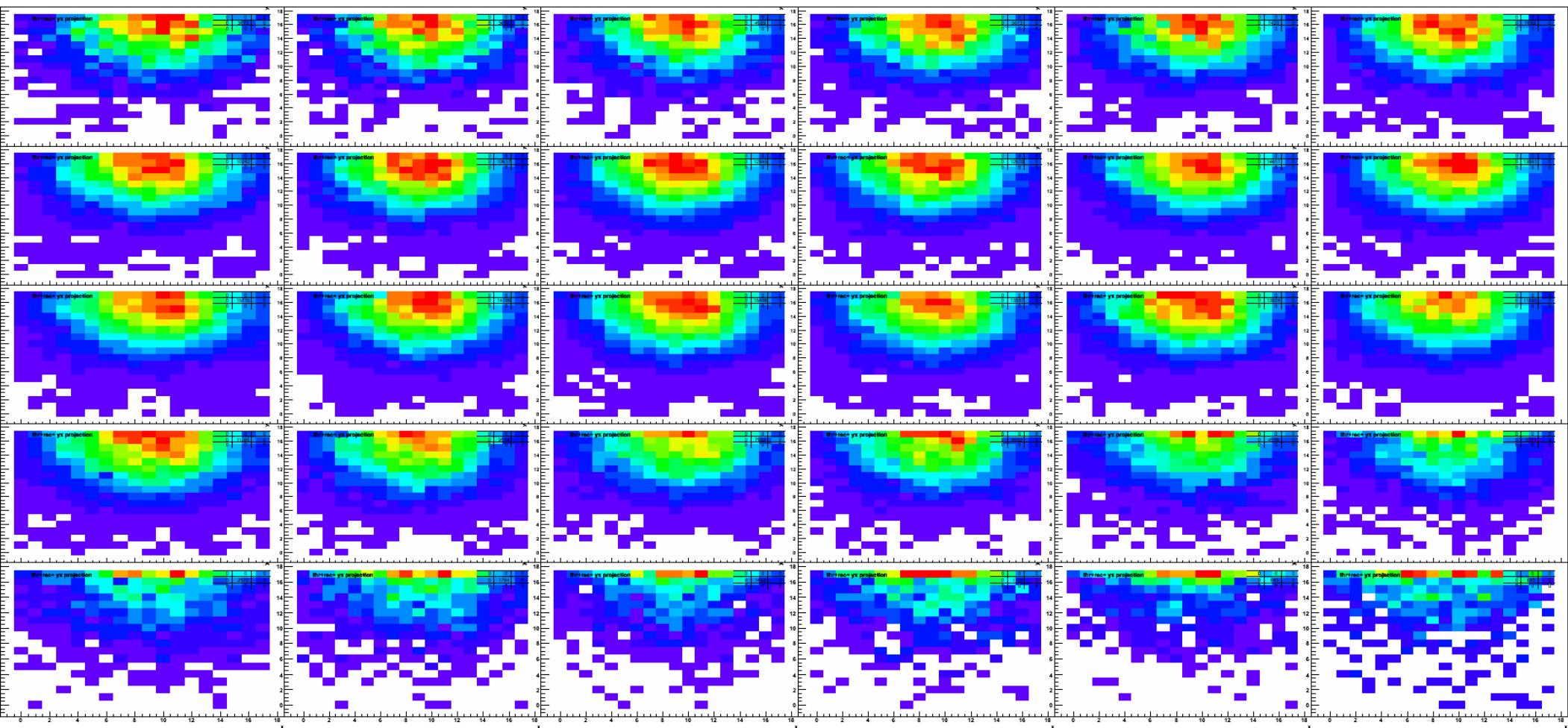
# Missing energy

Event energy, MIP, before/after the reconstruction



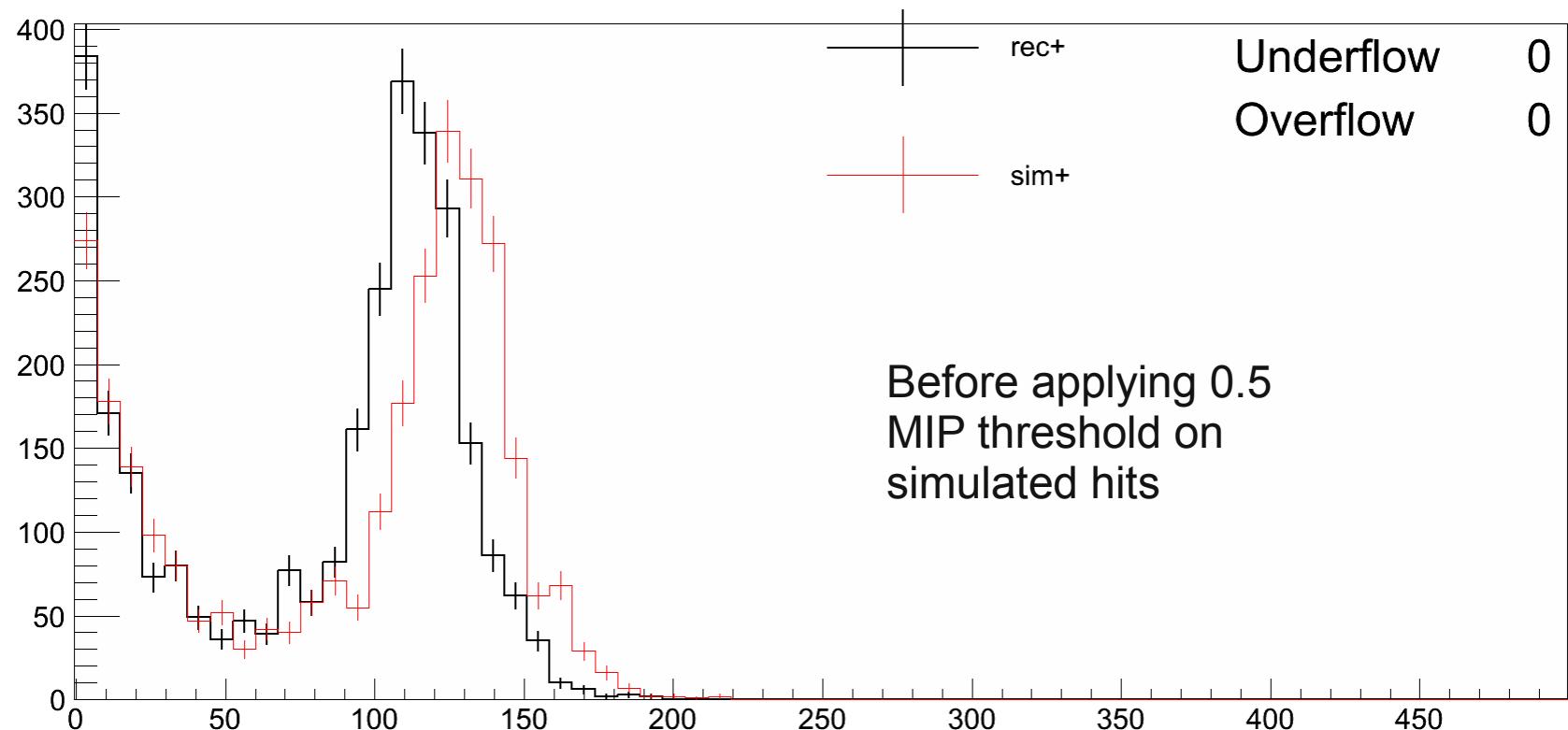
# New Monte Carlo

Same run number 300672.  
QGSP BERT physics.  
Barycenter is on the edge  
of ECAL????



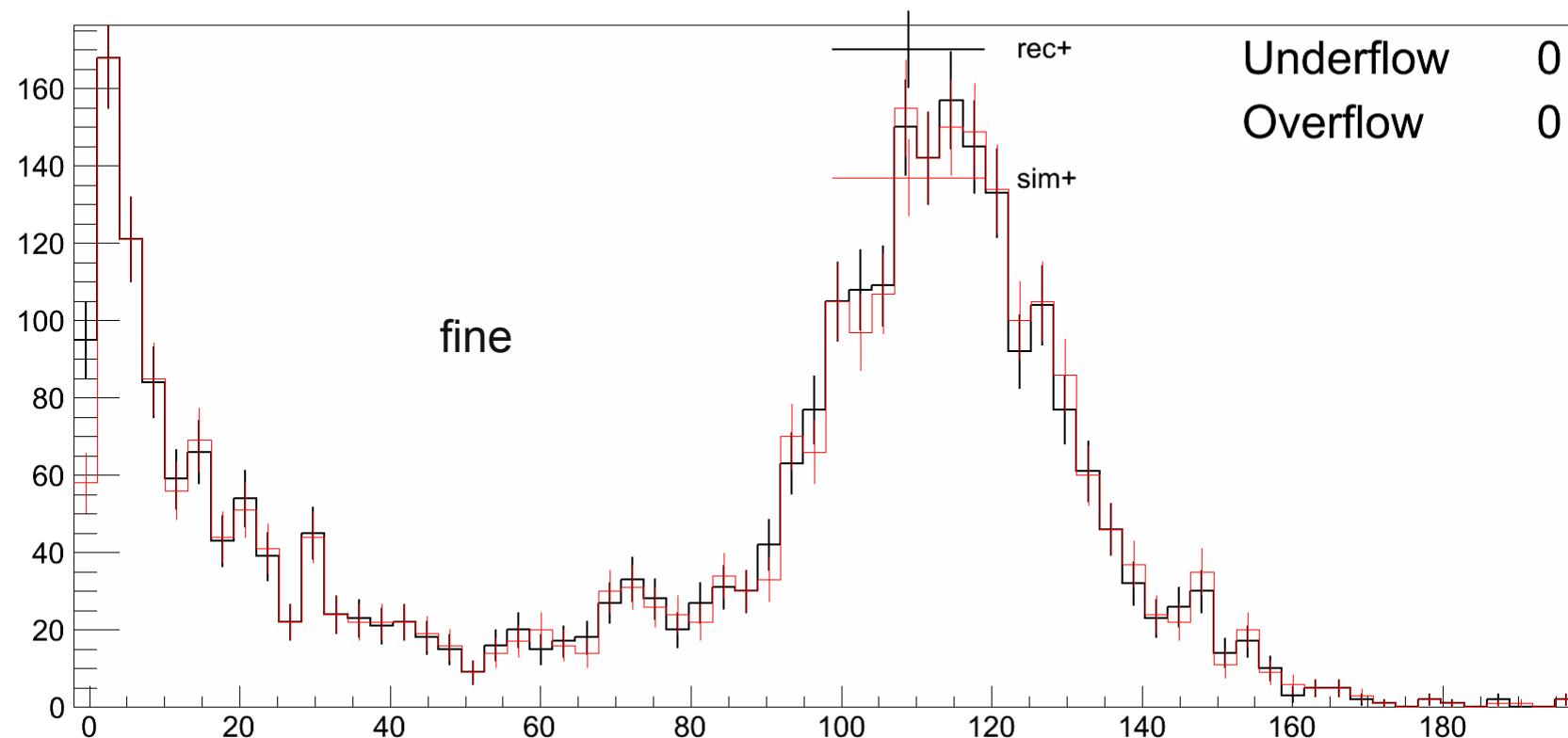
2010-07-04

# Hit multiplicity



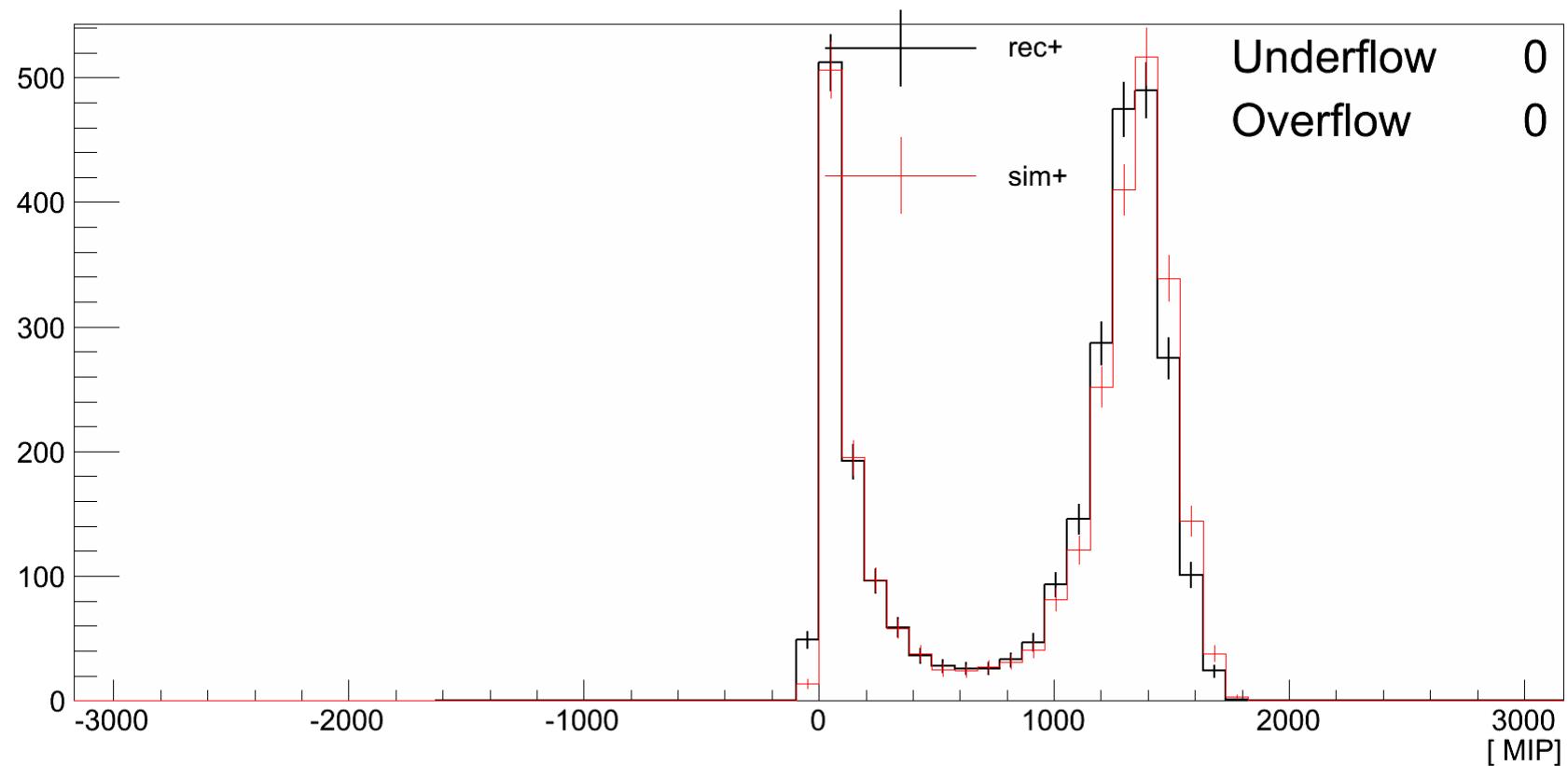
2010-07-04

# Hit multiplicity after threshold



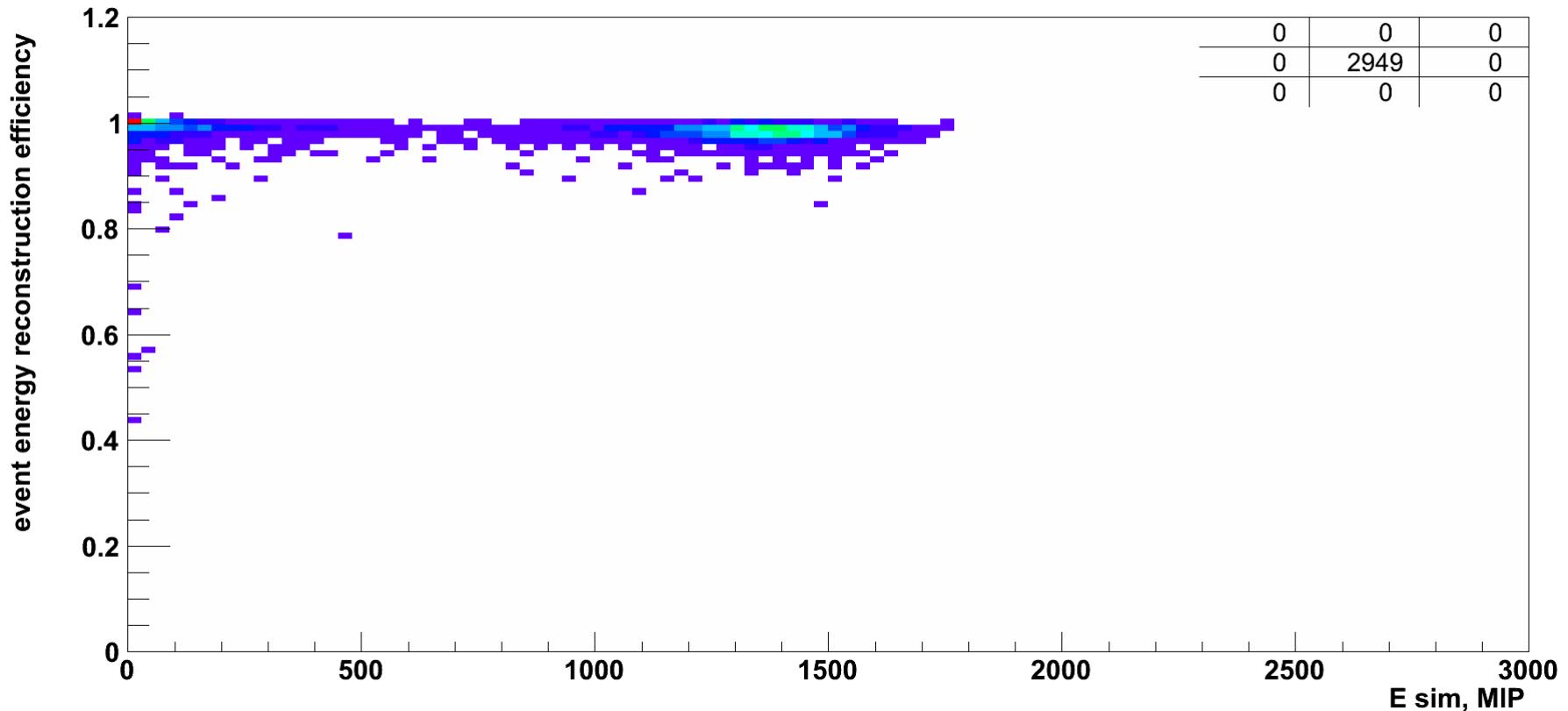
# Event energy

Good agreement



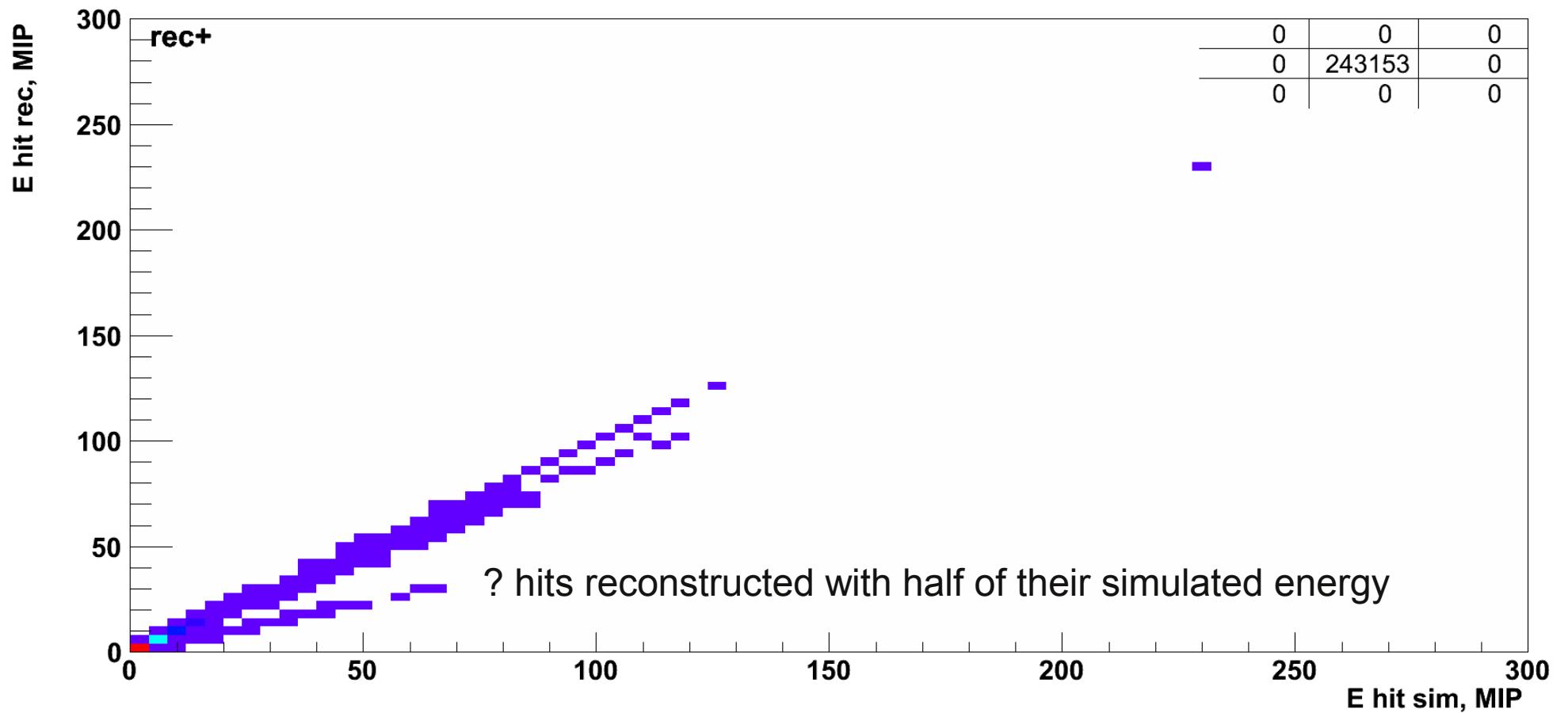
2010-07-04

# Event energy efficiency



2010-07-04

# Hit energy



2010-07-04

# Conclusions



- Noise is measured and stored in data base
- Now the real digitization is the default option in the trunk version
- Some features of reconstruction not understood