Software integration status of ScECAL

20 / May 2011 CALICE meeting at CERN

K. Kotera, KEK, staying DESY

Data @ FNAL

Sep 2008

Energy scan

e^- Uniform:1,3,6,12,16,25,32 GeV
Center: 1,3,6,12,16,25,32 GeV

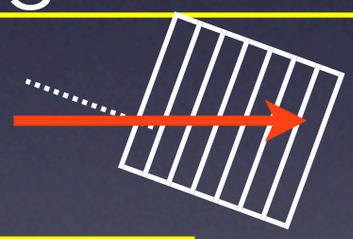
π^- Center: 3,6,12,16,25,32 GeV

Position scan

$e^-\pi^-$ mixed 32 GeV

Tilt angle scan

10°: e^-1,3,6,16,25,32 GeV
π^-3,6,16,25,32 GeV



π^0 run

π^- 16, 25, 32 GeV

MIP calibration

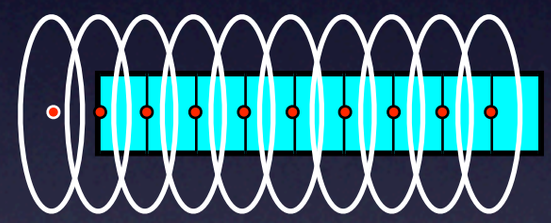
~ @ 20℃

May 2009

e^- Center:
1,2,4,8,12,15,20,30,32 GeV

π^- Center:
2,4,12,15,20,32,60(+) GeV

e^- 15 GeV



20°: e^- 2,4,8,15,20,32 GeV
π^- 8,15,32 GeV

π^+ 60 GeV

@ 20℃, 25℃,
Tilt angle 20° @ 20℃

Data @ FNAL

Sep 2008

CALICE note No 016

Energy scan

e^- Uniform:1,3,6,12,16,25,32 GeV
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Position scan

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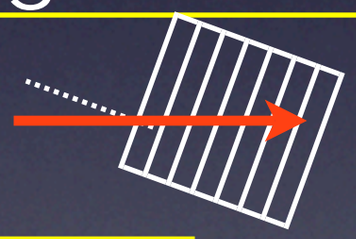

π^0 run

π^- 16, 25, 32 GeV

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May 2009

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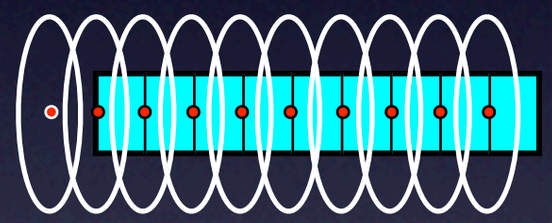
e^- 15 GeV



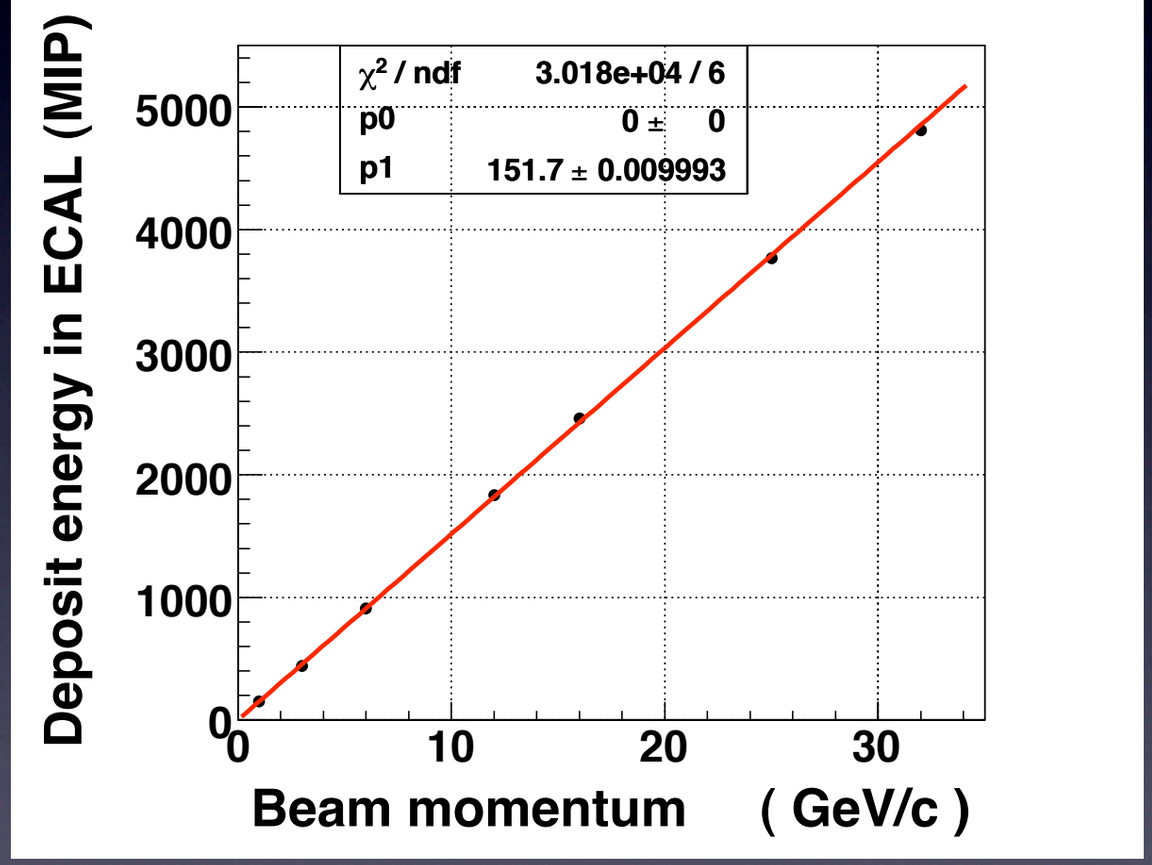
20°: e^- 2,4,8,15,20,32 GeV
π^- 8,15,32 GeV

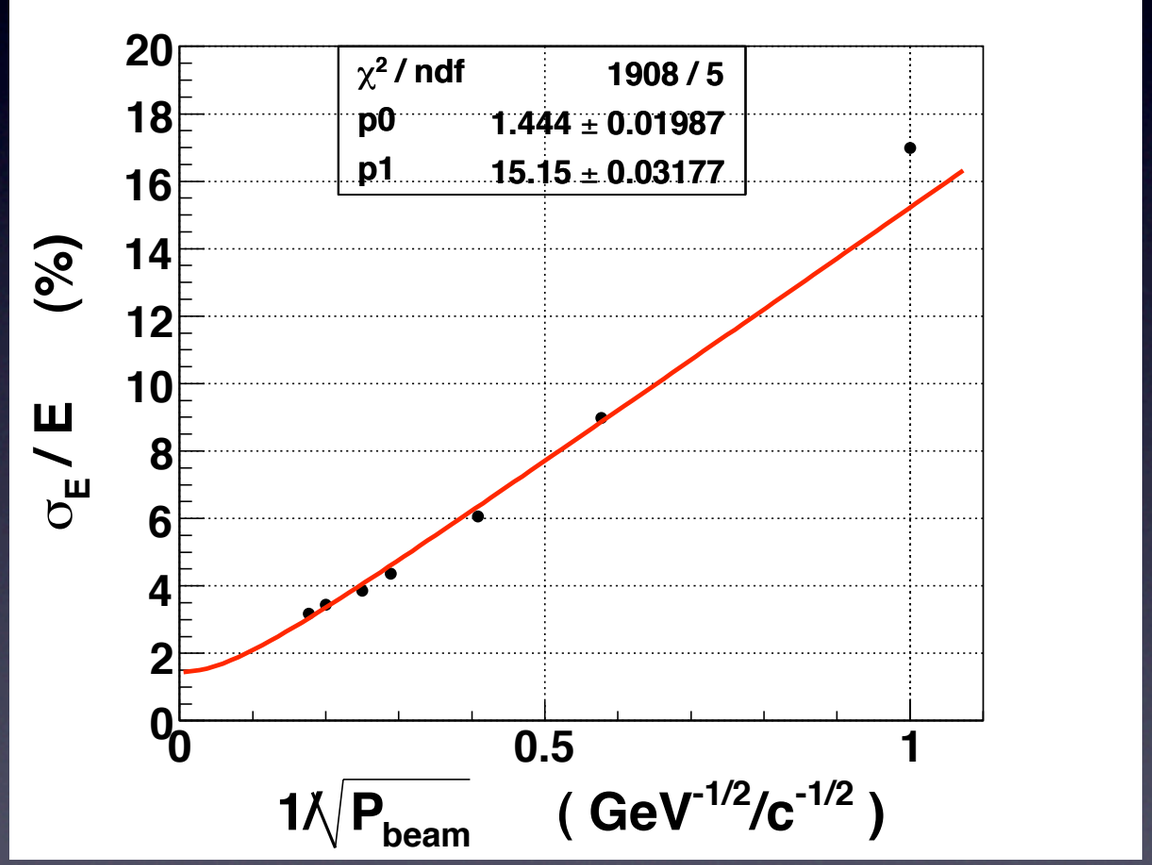
π^+ 60 GeV

@ 20℃, 25℃,
Tilt angle 20° @ 20℃

Status of analysis
Released result in CAN_016:
Linearity, Energy resolution

Sep 2008 (released 2009 Sep)

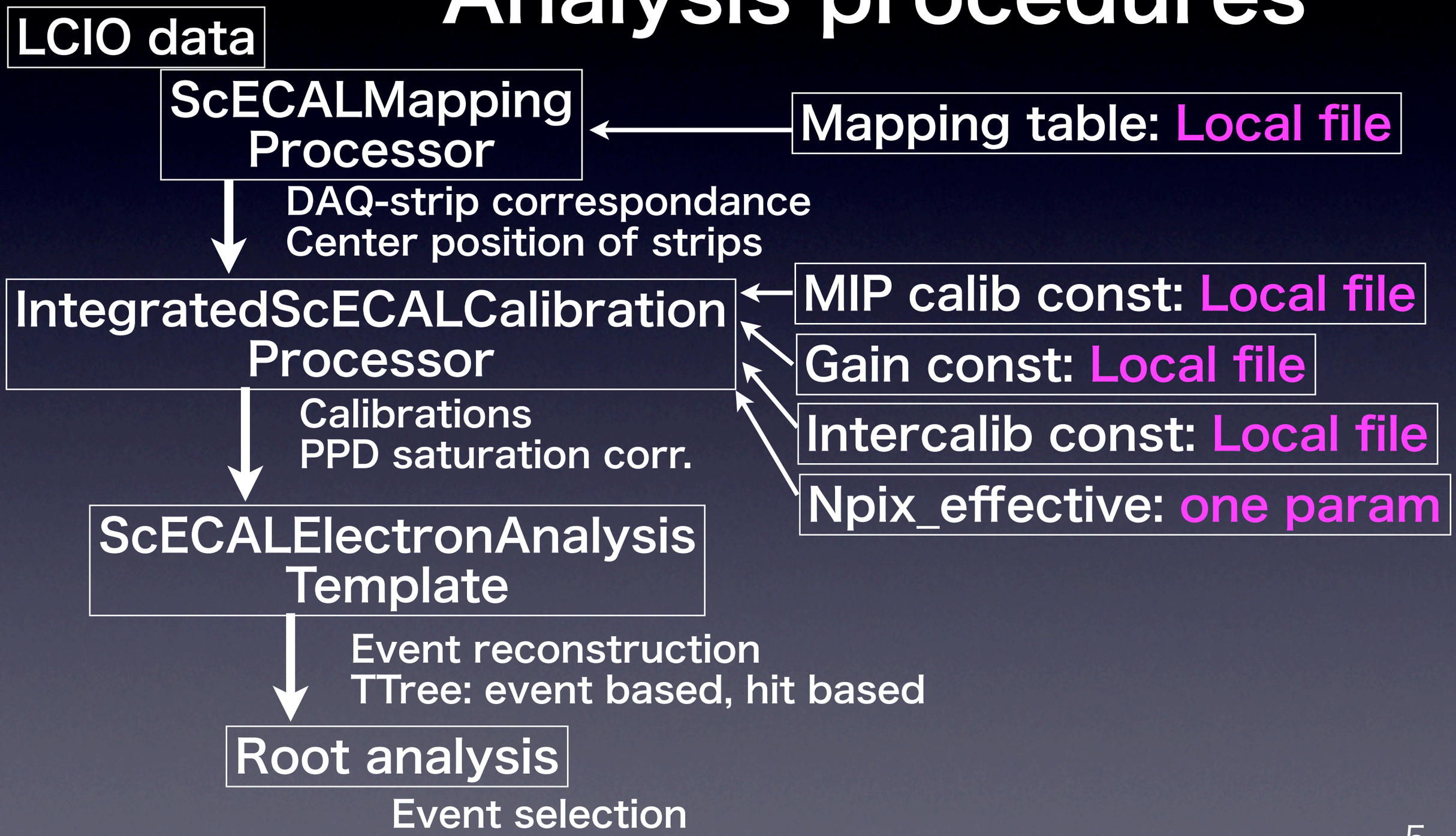




$\sigma/E = \sigma_{const} \oplus \sigma_{stat}/\sqrt{E}$ GeV

constant term	1.44±0.02%
stochastic term	15.15±0.03%

Status of analysis
Released result in CAN_016:
Analysis procedures



Status of analysis
Released result in CAN_016: Mapping

Layer:30 × Strip:72 → position

2160 strips

18ch	Chip	Chip	18ch
18ch	Chip	Chip	18ch
18ch	Chip	Chip	18ch
18ch	Chip	Chip	18ch
18ch	Chip	Chip	18ch
18ch	Chip	Chip	18ch

2 x 10 boards

FE Slot

specified

A Local Mapping file is read out

```
for(int ii=0;ii<2160;ii++){

file>>layer>>strip>>slot>>fe>>chip>>channel;
  _ScECALmap[slot][fe][chip][channel]
                              .first=layer;
  _ScECALmap[slot][fe][chip][channel]
                              .second=strip;
}
```

layer --> CellID0
strip --> CellID1

Some times DAQ-Strips ware changed!

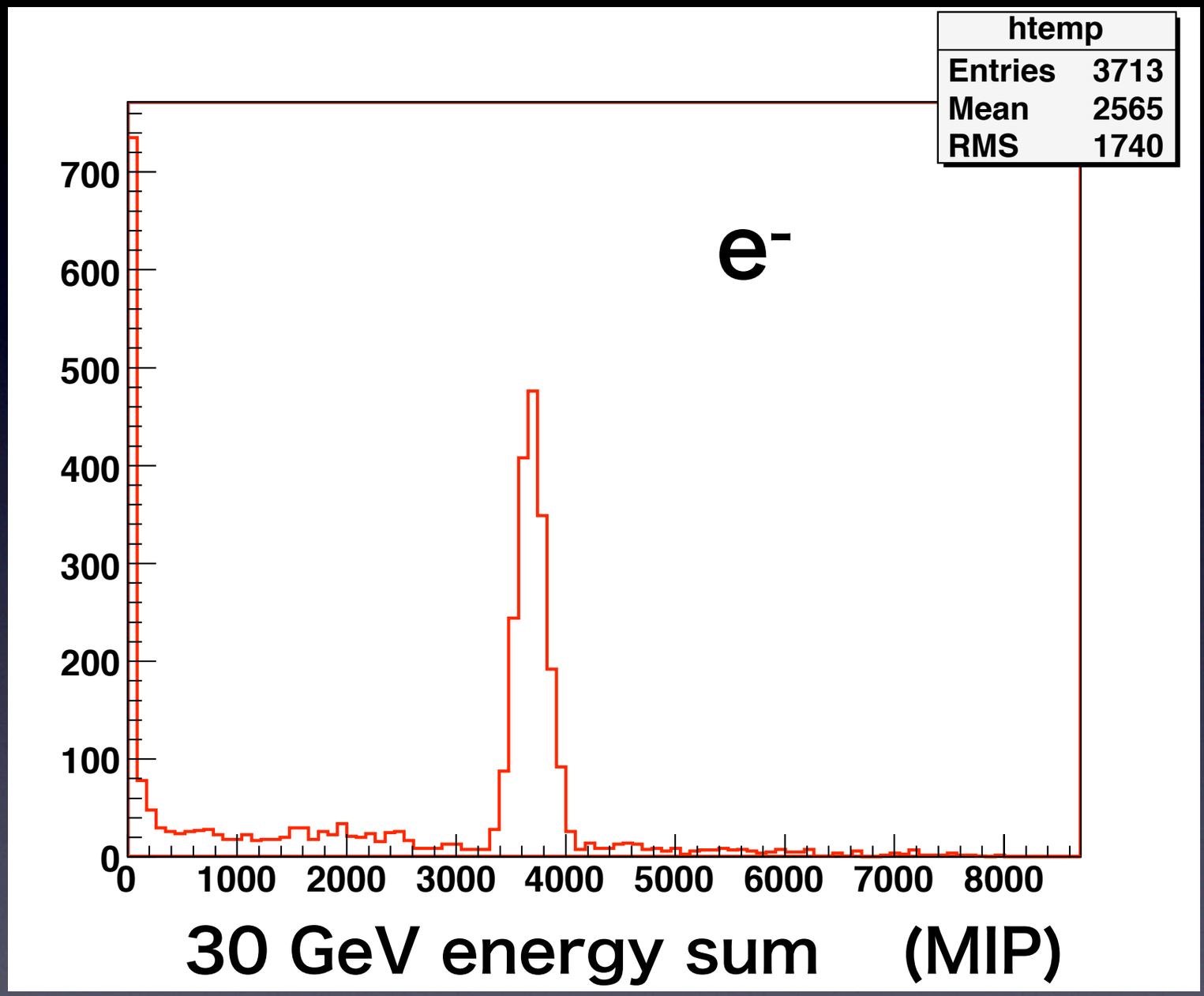
Status of analysis
Released result in CAN_016:
Other inputs.

Inputs for analysis	Status before I came here
DAQ-strip Mapping	Referring a local file
MIP calibration constants	- Referring a local file - muon run analyses with Root
Gain (one p.e. sensitivity)	- Referring a local file - LED run analyses with Root
Inter calibration constants	- Referring a local file - LED run analyses with Root
Temperature	not yet (stand alone system ’09)
MPPC Npix	a bench test result (2424)

Recent progress on making of Data bases

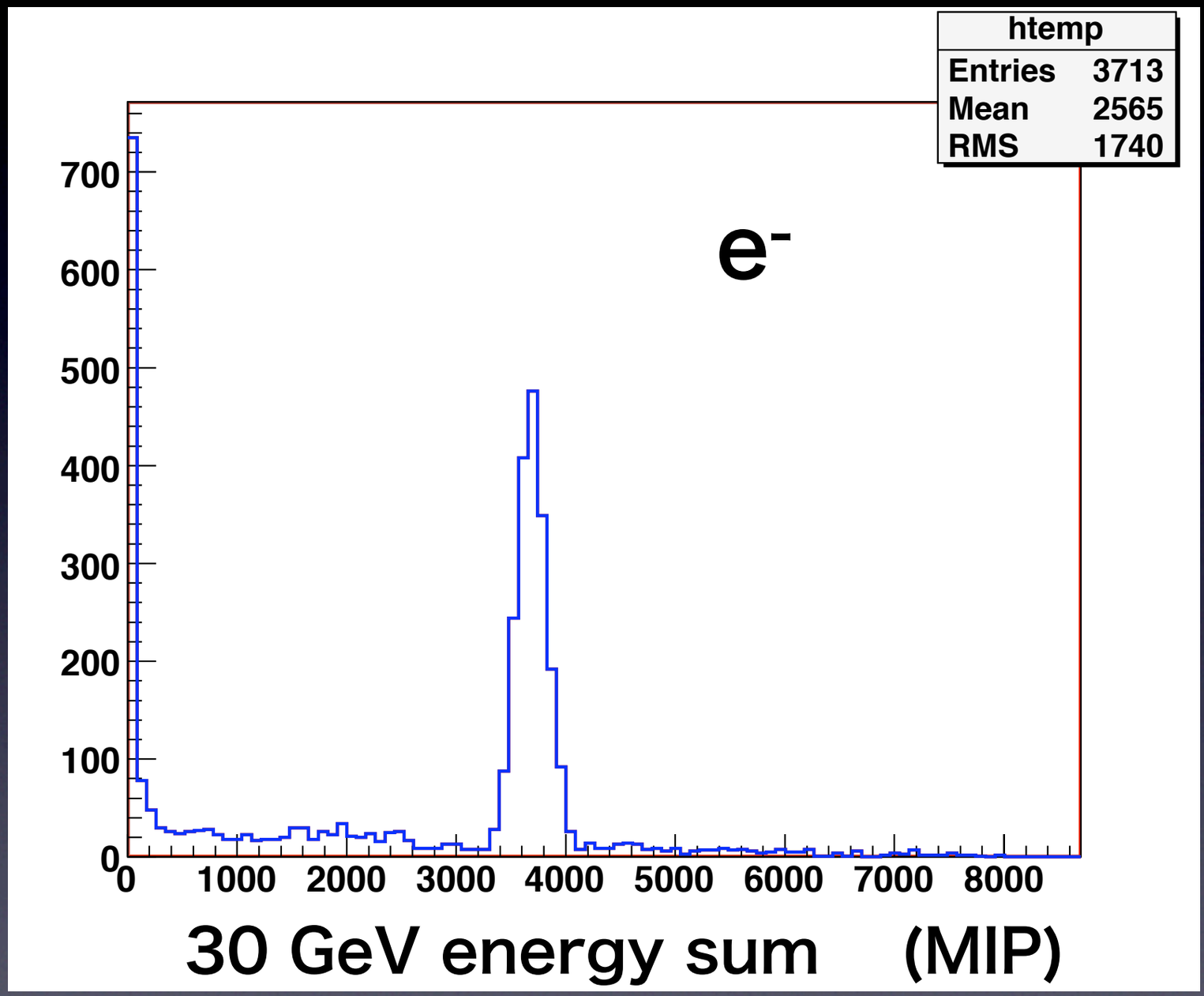
Inputs for analysis	Current status
DAQ-strip Mapping	Data base class▶not yet
MIP calibration constants	- class for data has been already made (Shaojun) - read by using a calibration processor - Data base was already uploaded (Shaojun)
Inter calibration constants	- class for data has been already made - read by using a calibration processor - Upload tools OK, uploaded
Gain (one p.e. sensitivity)	- class for data has been already made - read by using a calibration processor - Upload tools OK, uploaded
Temperature (stand alone meas. for 2009)	- class for data is under construction - read by using a calibration processor - Data base upload has not been yet done.
MPPC Npix	Basic study is on going in Shinsu

Check of codes with energy distribution



using local data file.

Check of codes with energy distribution

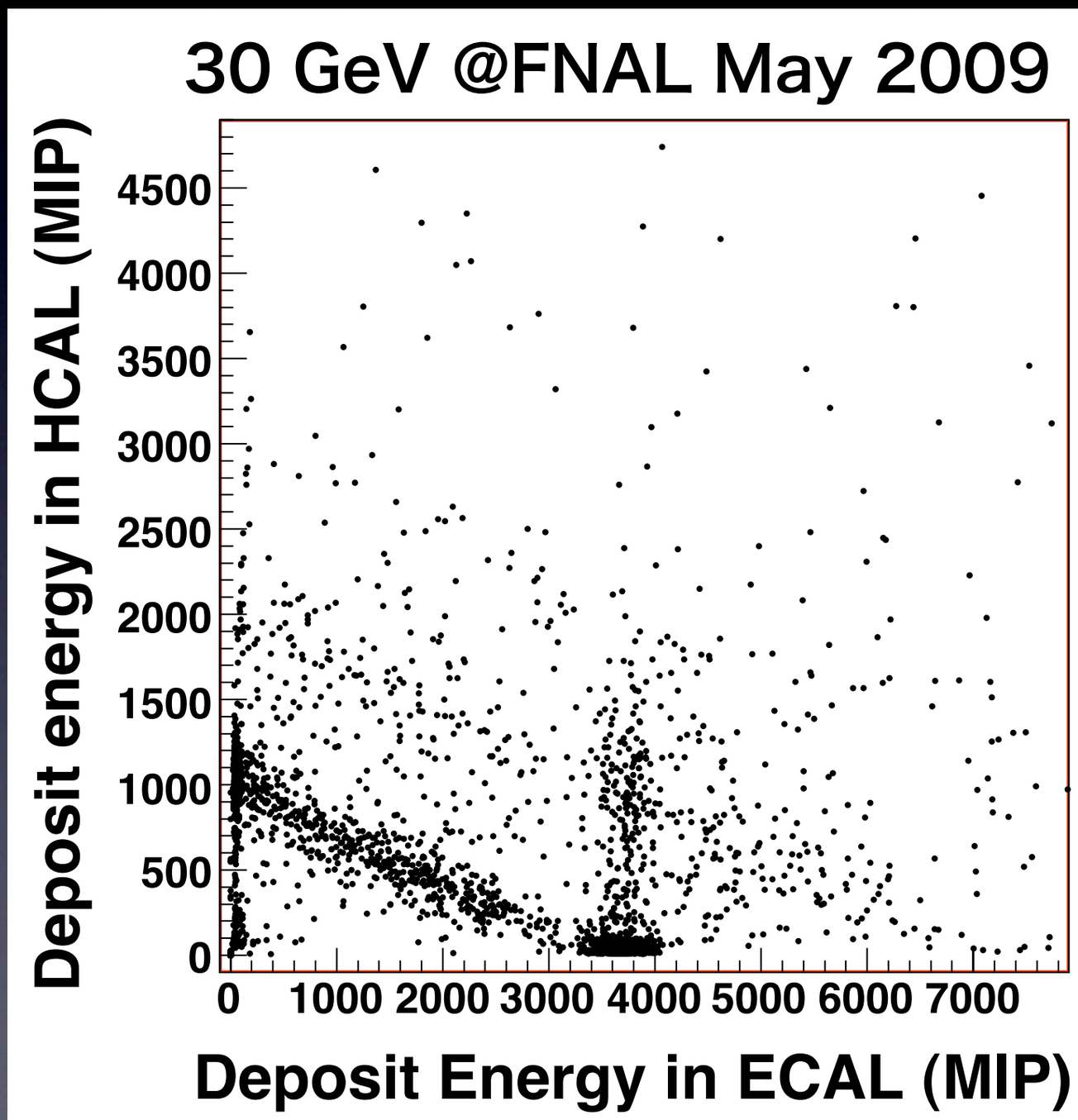


using CALICE Data Base

Of cause completely all events remains the same.

Involving in RootTreeWriter

Deposit energy in HCAL vs. ECAL



In previous analyses we independently made TTree branch for AHCAL in our ECAL analysis processor

I began to implement "ScECALHitWriterEngine" in RootTreeWriter (Template is by Shaojun)

We can automatically merge ScECAL TTree in a big TTree together with HCAL, TCMT, Tracker, Triggers ...

Summary

- Making ScECAL Data base was started and well done in current steps so far.
- After DB is completed, we do not need to care what data we should use as default any more.
- TTree writer lets coordinating analyses with different detectors be available easily.

Plan after CALICE meeting

- Suitable mapping DB should be made for all runs.
- Temperature DB will be available soon.
- current data base was made using Root analyses.
  - make calice_soft processors to measure the constants.
  - This leads us easier systematic analyses.
- Update databases and create new databases