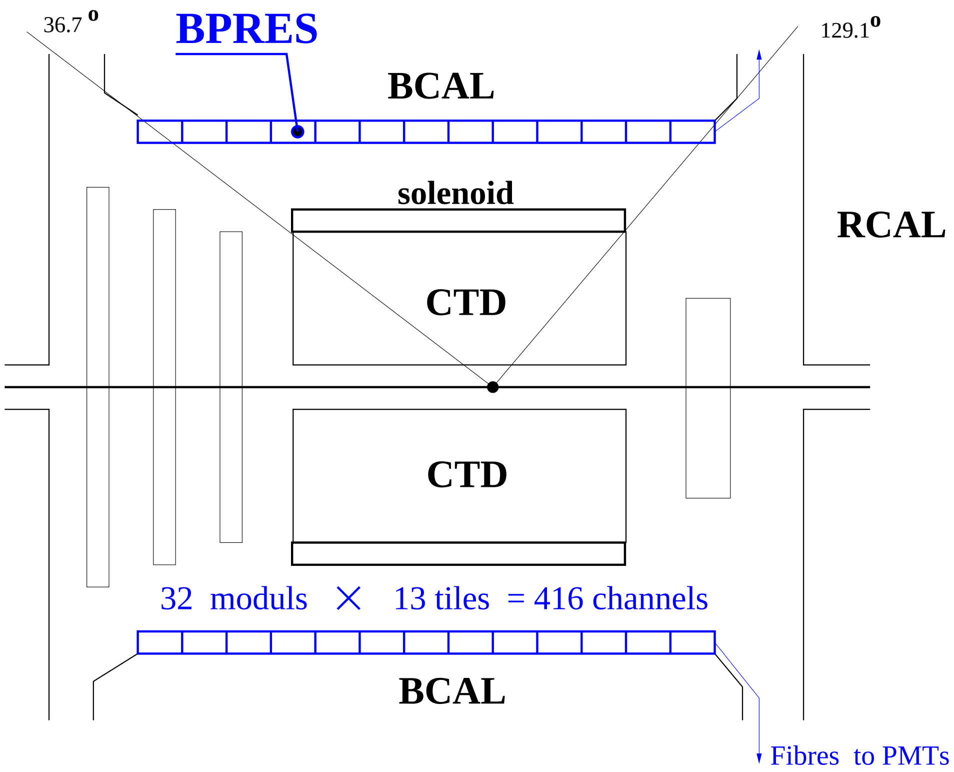
Status of the Barrel Presampler

Sergei Chekanov

(ANL)

for the BPRES crew



Physics Motivation

- Electron energy correction at high Q^2
- Correction of P_t and $E - P_z$ for CC
- Correction of jet energy
- To improve e/π separation for BCAL
- To improve π^0/γ separation for BCAL

Mechanical Status

- 32 modules and PMT housing with fibers were installed during 1998

Electronic Status

- Analog and digital readout system installed during 1998

HV system Status

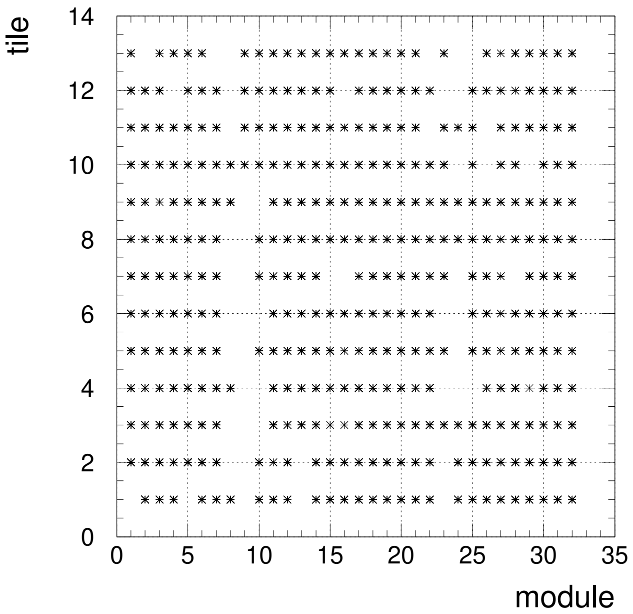
- HV system was installed during 1998
- HV was tuned for each individual PMT
- $< 8\%$ bad channels due bad PMT bases

DAQ and other ..

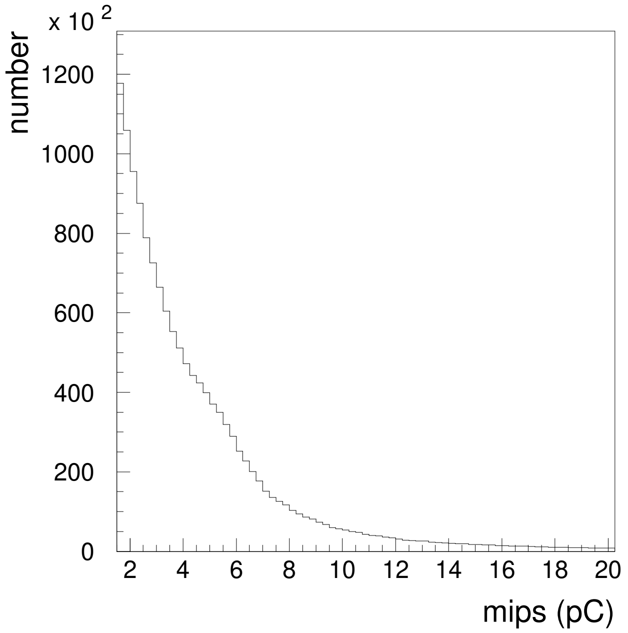
- Daily automatic off-line DQM checks
- MC simulation is included into FUNNEL

Work to do

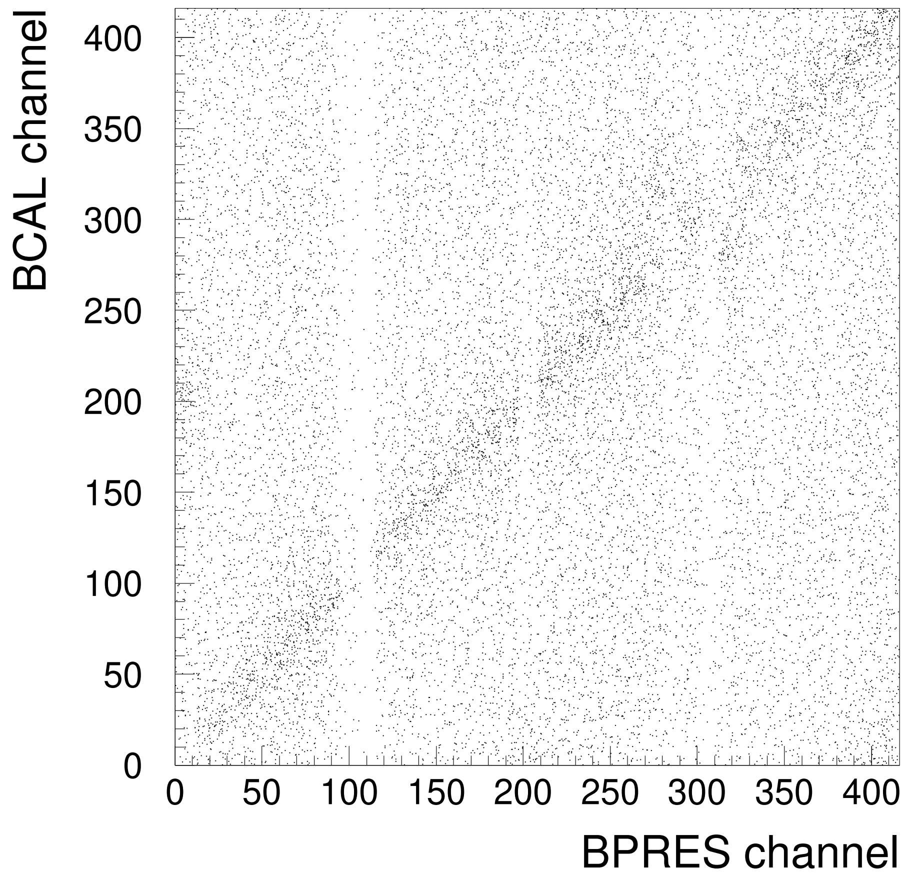
- Inclusion of the BPRES into LAZE
- On-line checks for TLT programs



tile
module
0
5
10
15
20
25
30
35
14
12
10
8
6
4
2
0

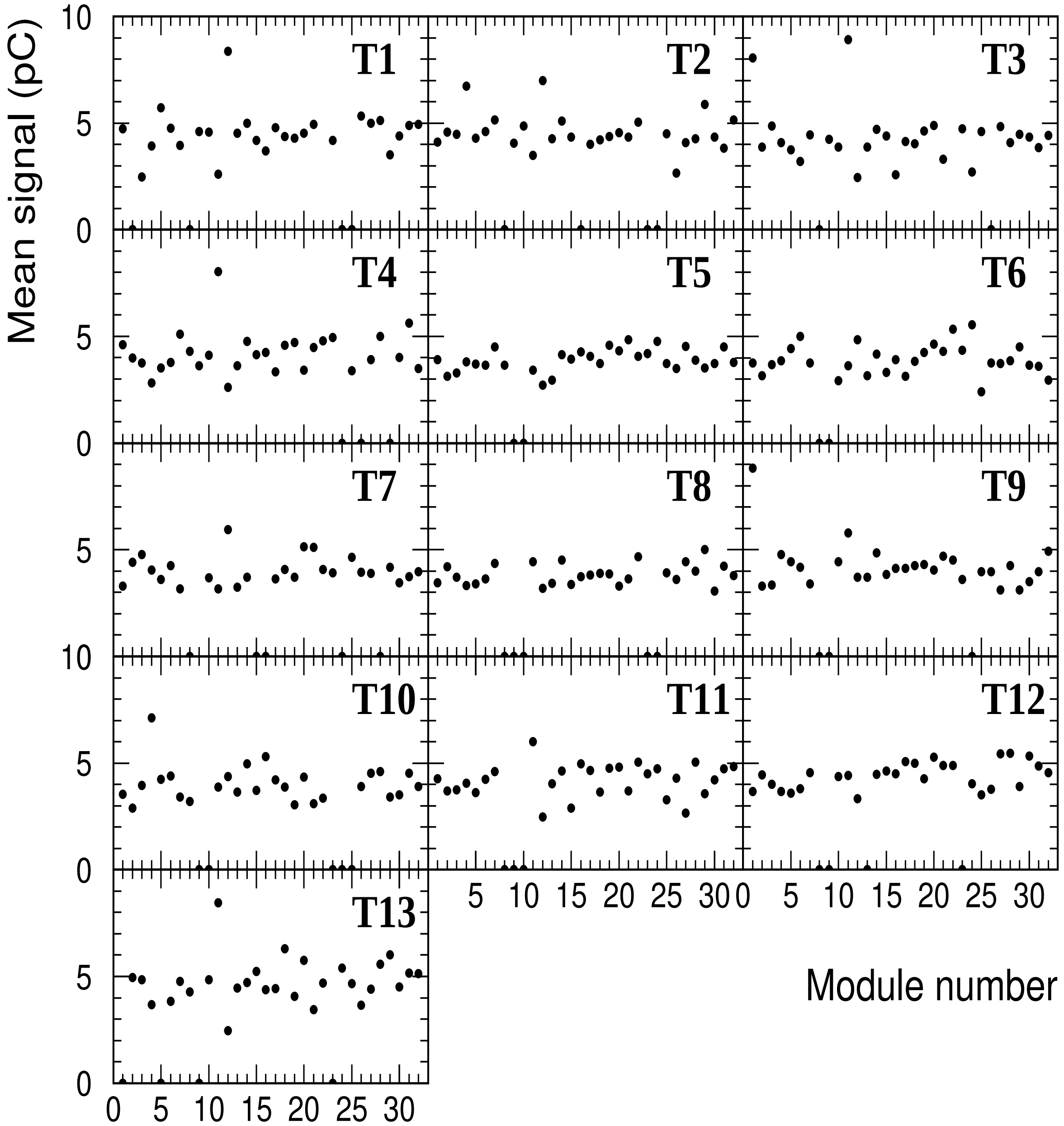


number
x 10 2
1200
1000
800
600
400
200
0
2
4
6
8
10
12
14
16
18
20
mips (pC)



EMC energy > 1.0 GeV

BPRES signal > 1.5 pC



Mean signal (pC)
T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
T11
T12
T13
Module number

ZEUS BPRES HOME PAGE

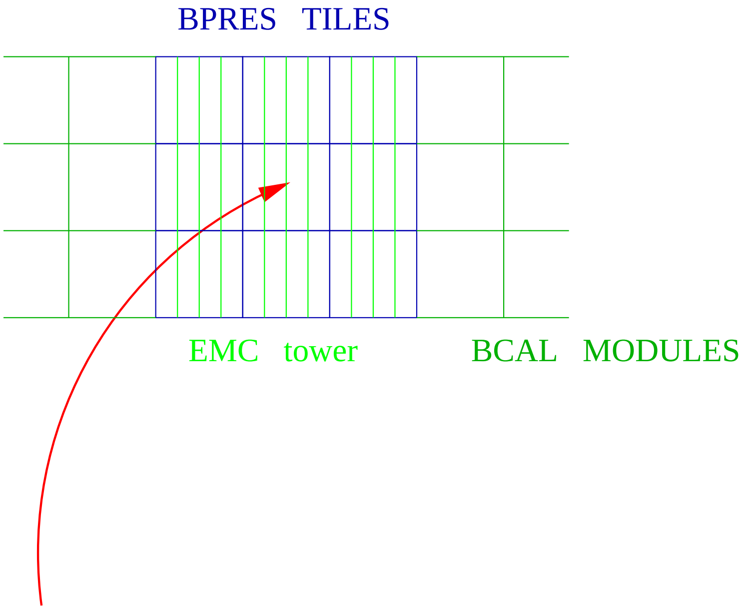
- **Daily Off-Line DQM Report**
- **BCAL PreSampler Upgrade Information**
- **BPRES News**

- **How to use the BPRES to correct the energy of BCAL electrons**
- **How to use the BPRES to correct the energy of jets in BCAL**

Mail to: chekanov@mail.desy.de

Last updated: Jan 1999,

WWW Location : *http : //www.desy.de/~chekanov/bpres.html*



Electron Energy Correction

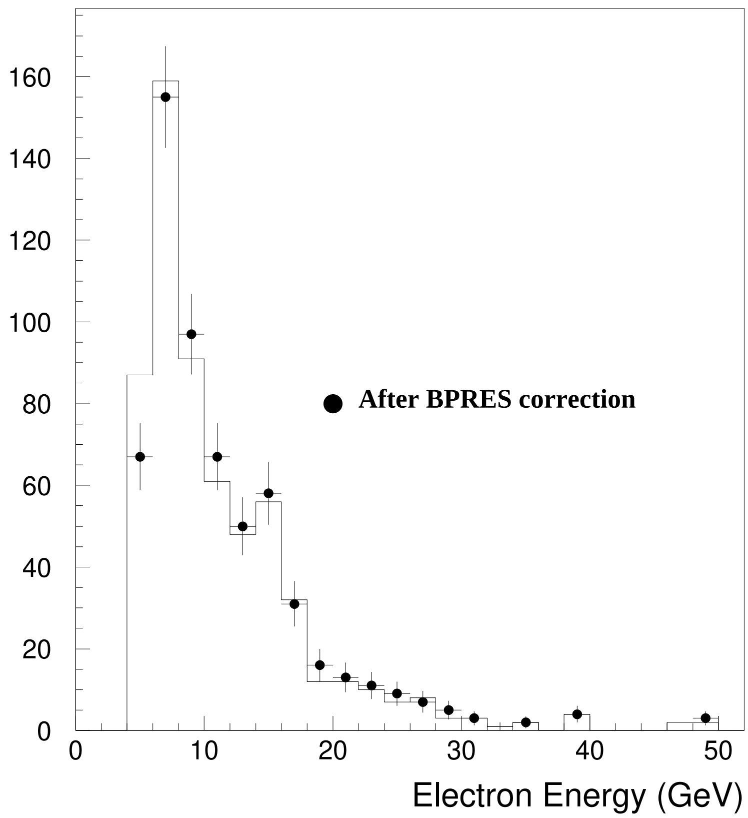
- Identify BPRES tiles closest to the center of SIRA electron
- Calculate total energy in BPRES tiles above threshold (1.5 pC)
- Apply correction:

$$E_{COR} = \frac{E_{BCAL} - \alpha_0 - \alpha_1 E_{BPRES}}{\beta_0 + \beta_1 E_{BPRES}}$$

Average fit values for $X_0 = 1 - 2$ are

$$\alpha_0 = -0.278, \quad \alpha_1 = -0.015, \quad \beta_0 = 1.059, \quad \beta_1 = -0.017$$

Method is implemented in BPRECOR subroutine

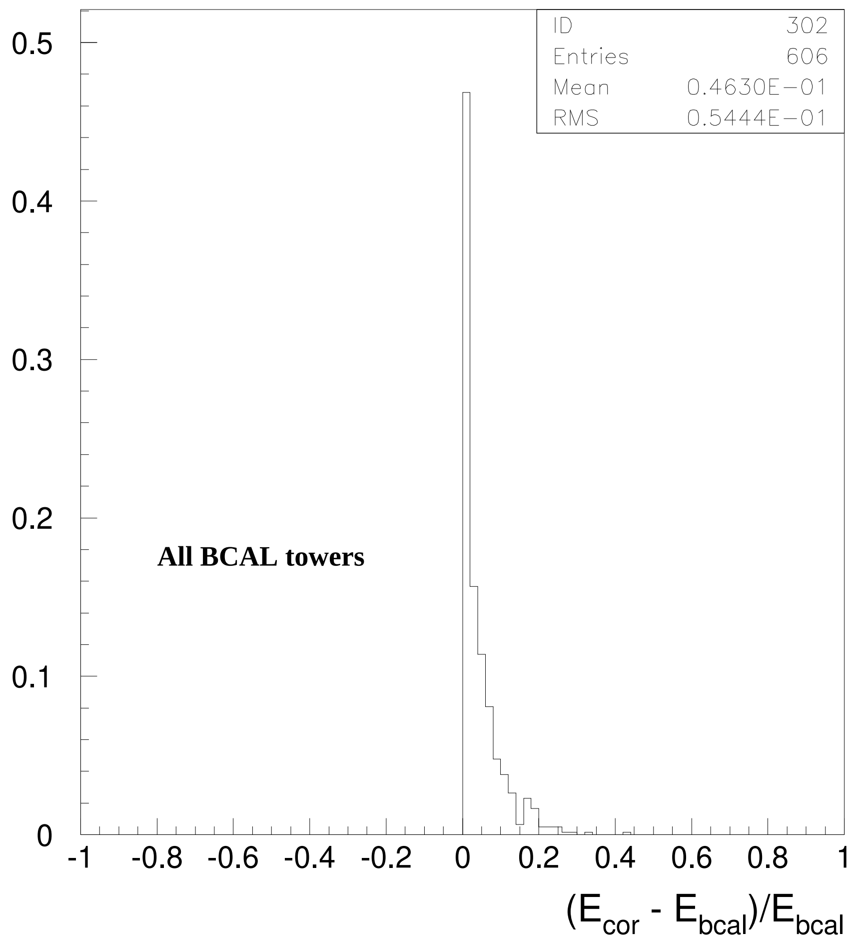


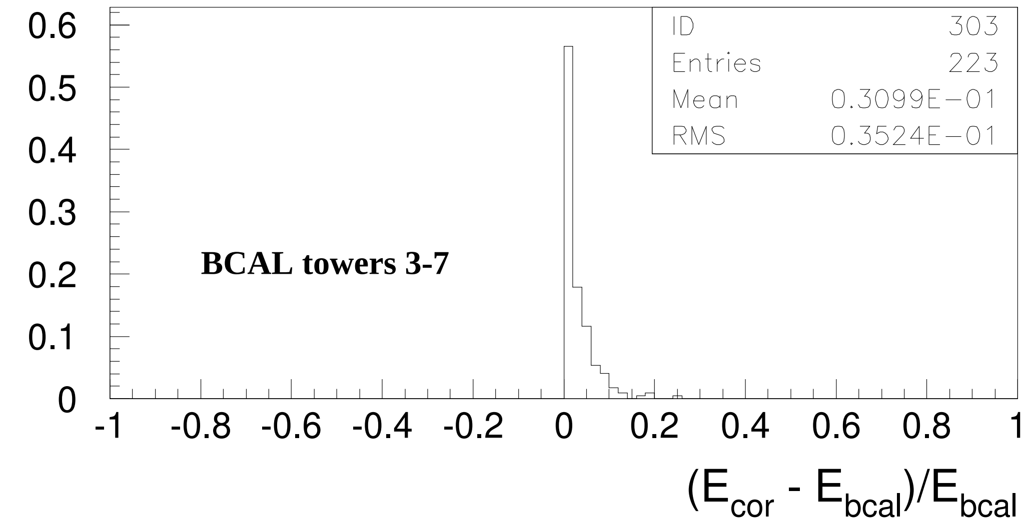
Selection

- 1999 data, 1.6 pb^{-1} Bit 14 (Golden DIS)
- Electrons $E > 5$ GeV for $-0.75 < \eta < 1.1$ (BCAL only)
- $40 < E - P_z < 60$ GeV
- $y_e < 0.95$

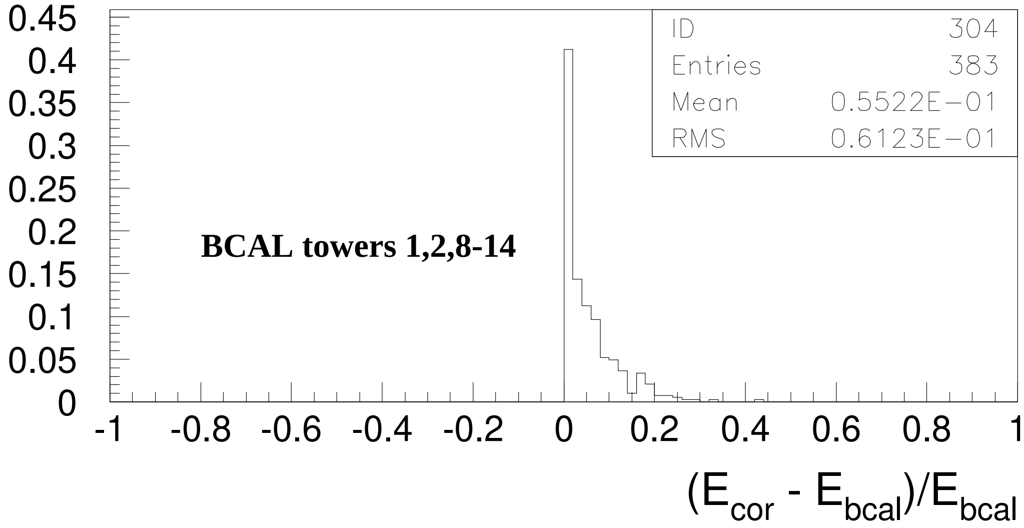
Correction for $E > 5$ GeV for all BCAL towers: 4.6%

Efficiency of the BPRES correction : 80 %

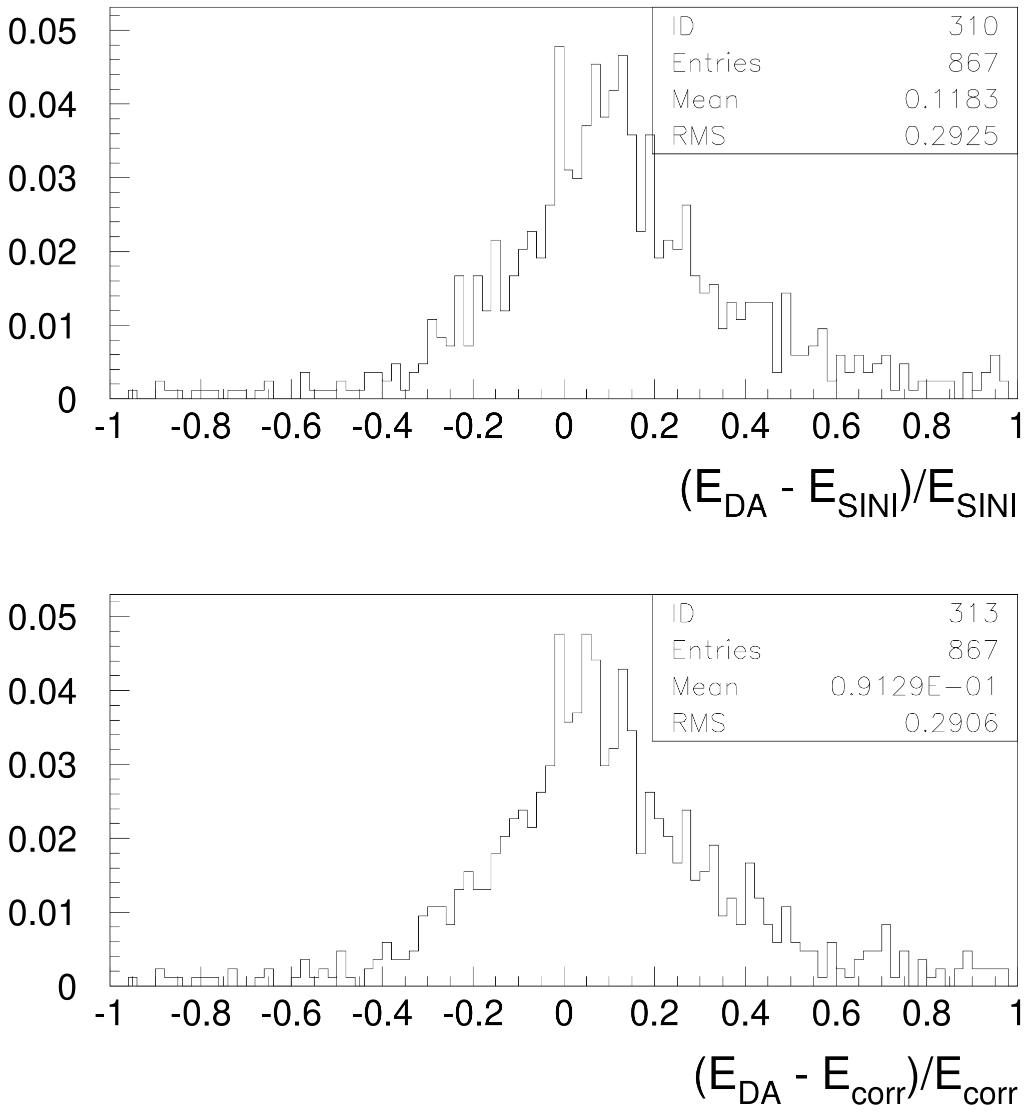




ID 303
Entries 223
Mean 0.3099E−01
RMS 0.3524E−01
BCAL towers 3-7
$(E_{cor} - E_{bcal})/E_{bcal}$

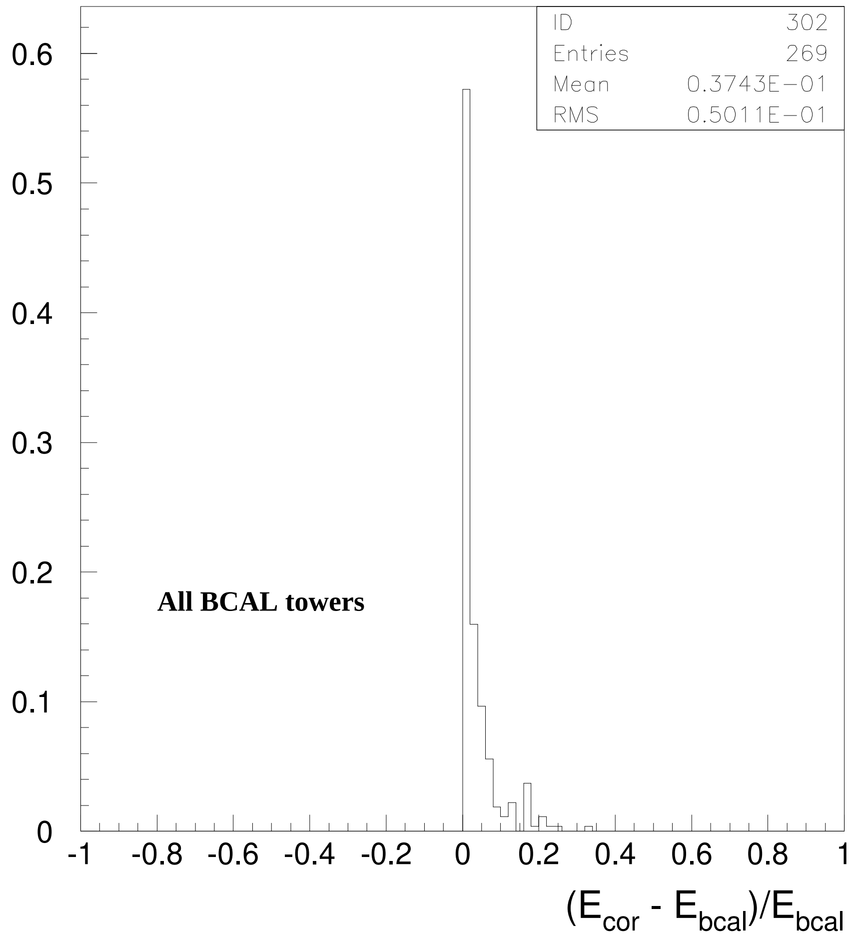


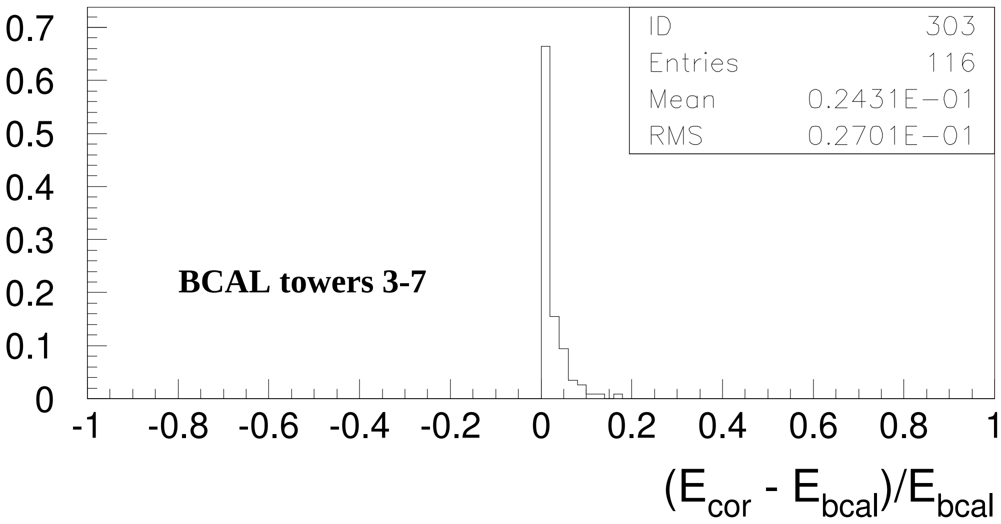
ID 304
Entries 383
Mean 0.5522E−01
RMS 0.6123E−01
BCAL towers 1,2,8-14
$(E_{cor} - E_{bcal})/E_{bcal}$

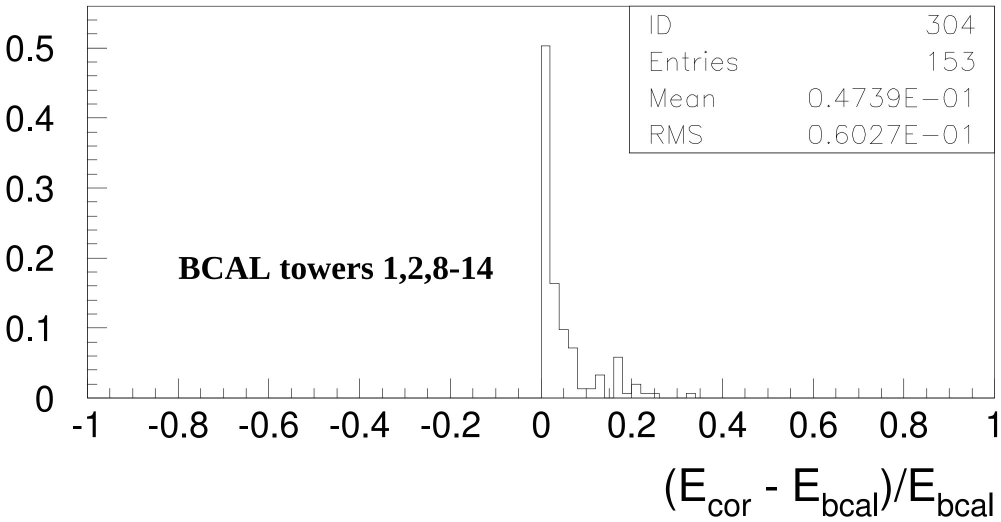


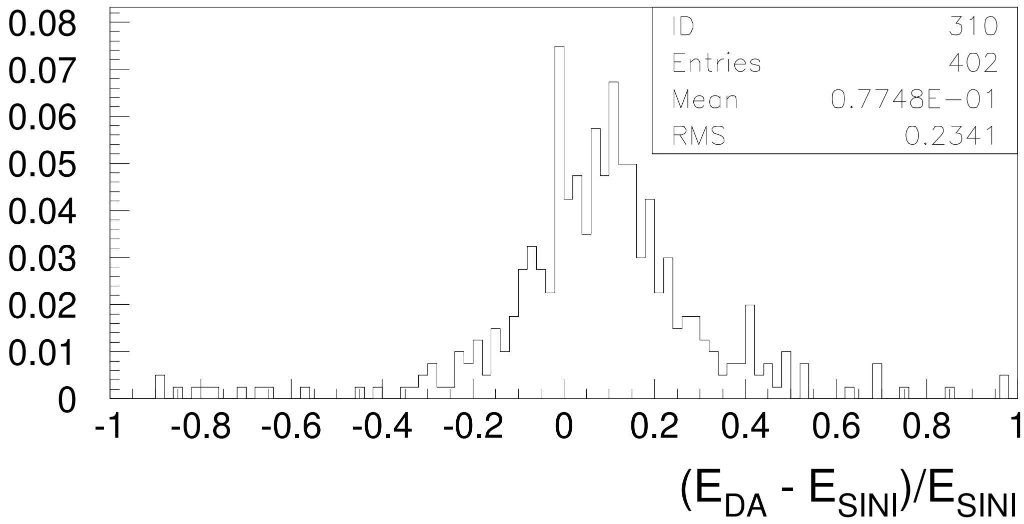
ID 310
Entries 867
Mean 0.1183
RMS 0.2925
$(E_{DA} - E_{SINI})/E_{SINI}$
ID 313
Entries 867
Mean 0.9129E-01
RMS 0.2906
$(E_{DA} - E_{corr})/E_{corr}$

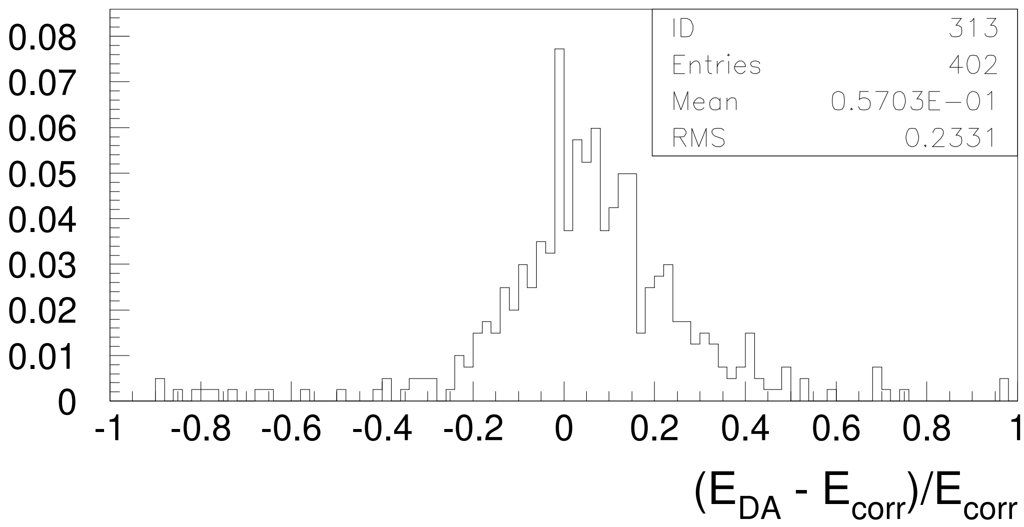
Correction for $E > 10$ GeV for all BCAL towers: 3.7%




ID 303
Entries 116
Mean 0.2431E-01
RMS 0.2701E-01
BCAL towers 3-7
(E_cor - E_bcal)/E_bcal


ID 304
Entries 153
Mean 0.4739E-01
RMS 0.6027E-01
BCAL towers 1,2,8-14
(E_cor - E_bcal)/E_bcal


ID 310
Entries 402
Mean 0.7748E-01
RMS 0.2341
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
-1 -0.8 -0.6 -0.4 -0.2 0 0.2 0.4 0.6 0.8 1
$(E_{DA} - E_{SINI})/E_{SINI}$


ID 313
Entries 402
Mean 0.5703E-01
RMS 0.2331
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
-1 -0.8 -0.6 -0.4 -0.2 0 0.2 0.4 0.6 0.8 1
$(E_{DA} - E_{corr})/E_{corr}$