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# Data vs MC in Period-5 with release 11.4.0

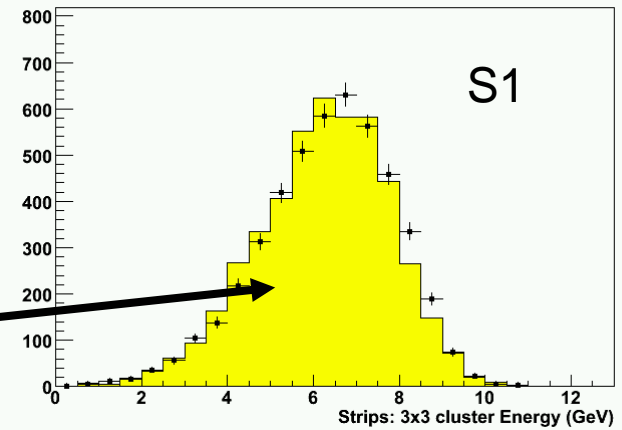
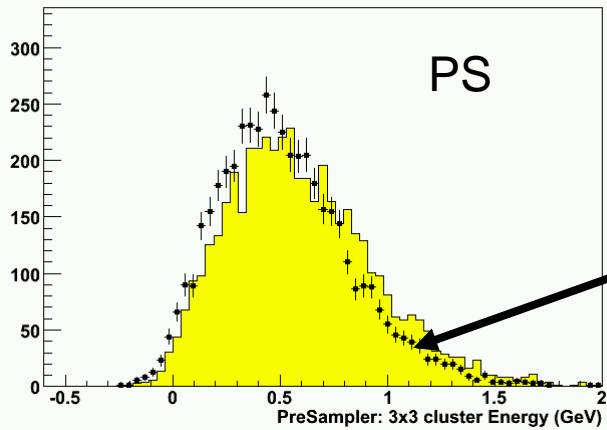
LAr CTB meeting  
CERN, 16-May-2006

# MC changes: from 10.5.0 to 11.4.0

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- ◆ G4 was patched: geant4-07-01-patch-01
- ◆ Migration to GeoModel
- ◆ Introduction of current maps for the PS:
  - expect: 10-11% reduction of the PS response
  - Shape not expected to change
- ◆ Change in the absorber thickness:
  - 1-1.5% lower sampling fractions (for the same G4 version)
    - Such changes in the SF are usually absorbed in the LArCell but for 11.4.0 the new SFs were not in the database.
    - In 11.5.0 the new SFs will be used for ATLAS but not for the CTB.
- ◆ For the same amount of upstream material, the S1/S2 ratio should slightly increase in 11.4.0
- ◆ OFC change: from TB-09 to TB-13.

# MC vs MC



Bullets=11.4.0

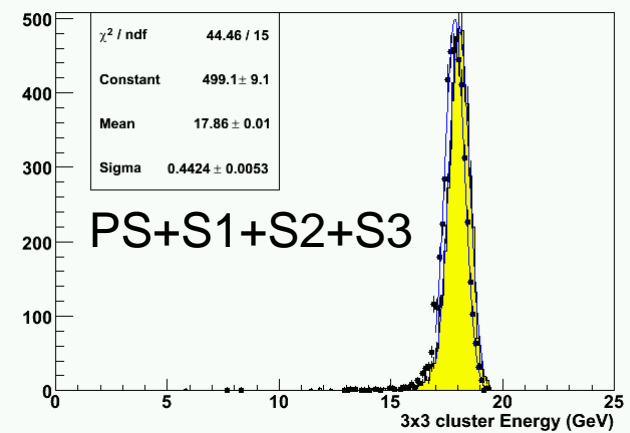
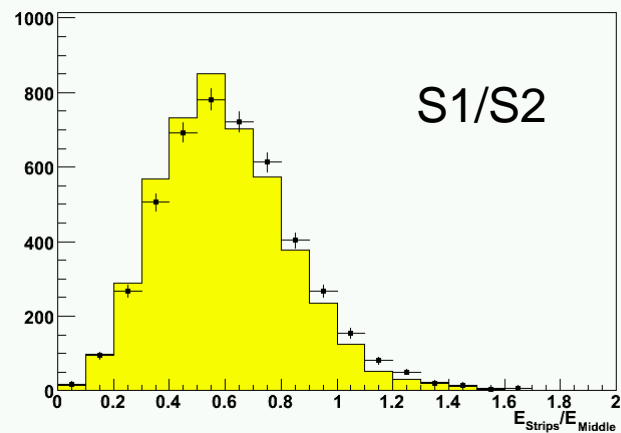
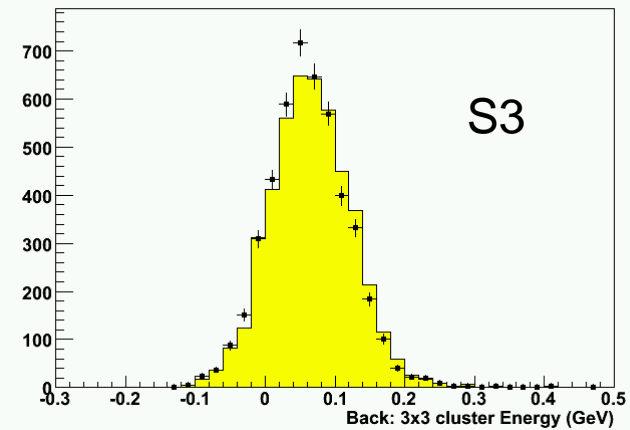
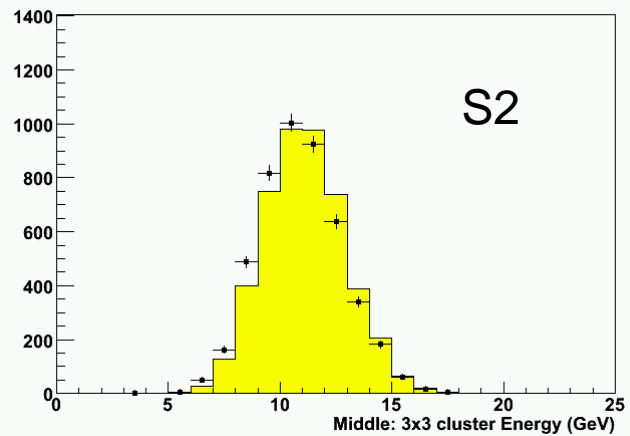
Histo=10.5.0

## RATIOS

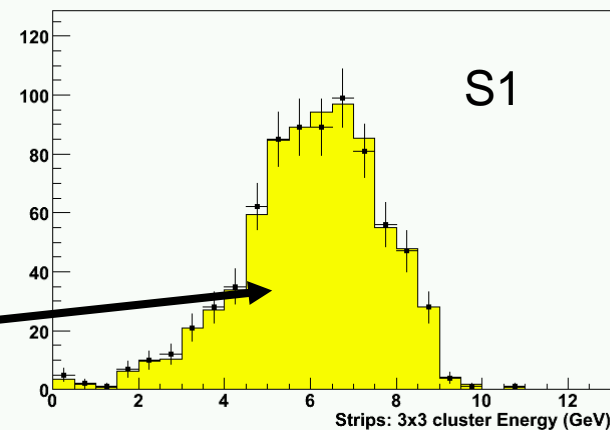
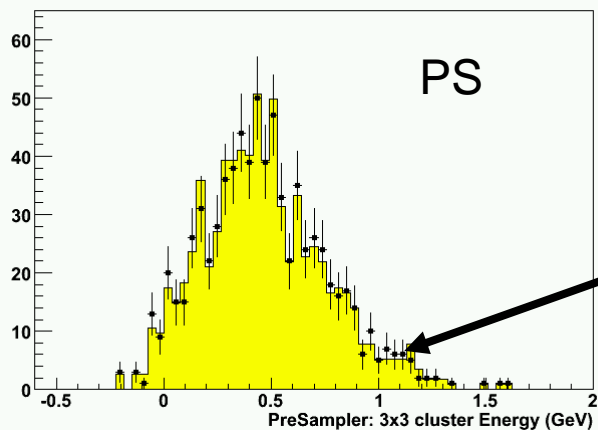
E=20GeV R=1000952

(11.4.0)/(10.5.0)

E	0.99
PS	0.87
S1	1.015
S2	0.98
S3	0.95
S1/S2	1.037
S0/S1	0.87



# Data vs Data



Bullets=11.4.0

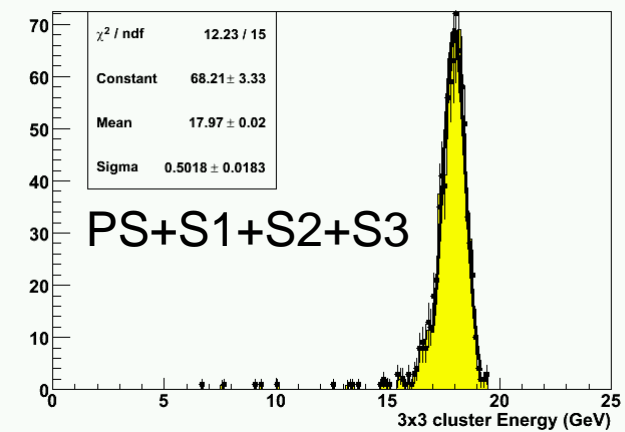
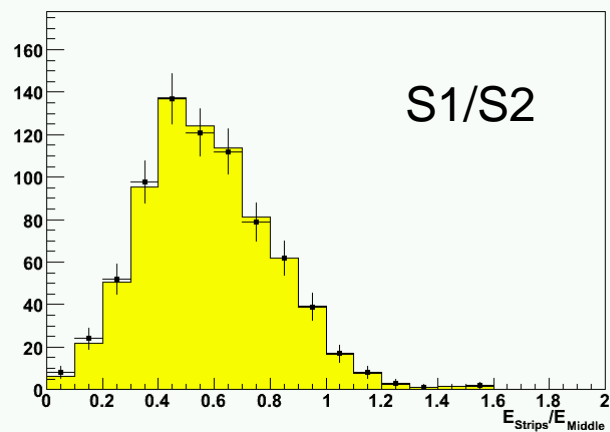
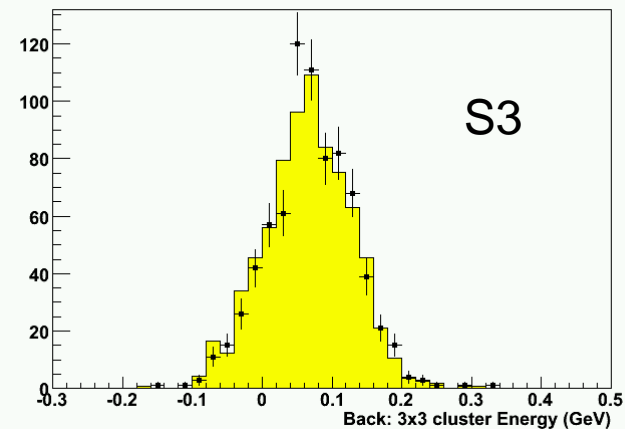
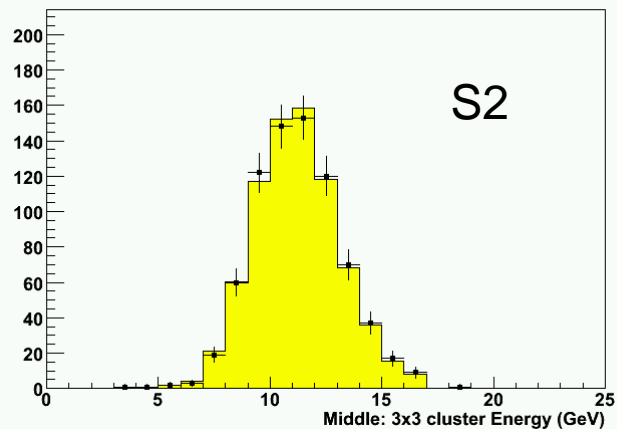
Histo=10.5.0

## RATIOS

E=20GeV R=1000952

(11.4.0)/(10.5.0)

E	1.0
PS	1.0
S1	0.992
S2	1.003
S3	1.054 (0.03)
S1/S2	1.01



# New SFs + New OFCs : new factors

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Data factors:

Strip Correction = 0.91

MC factors:

EMscale = 0.97

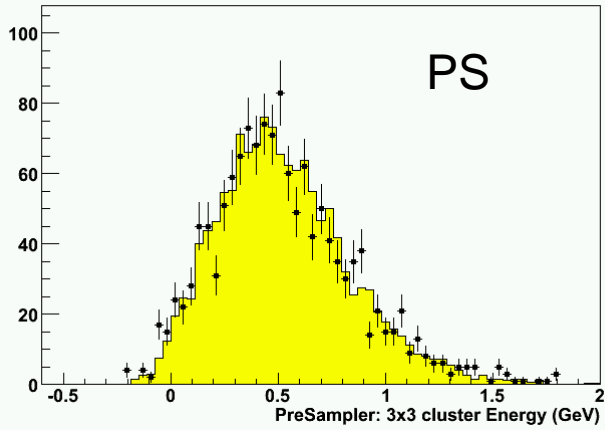
PSscale = 0.88

ONLY FAR UPSTREAM MATERIAL:

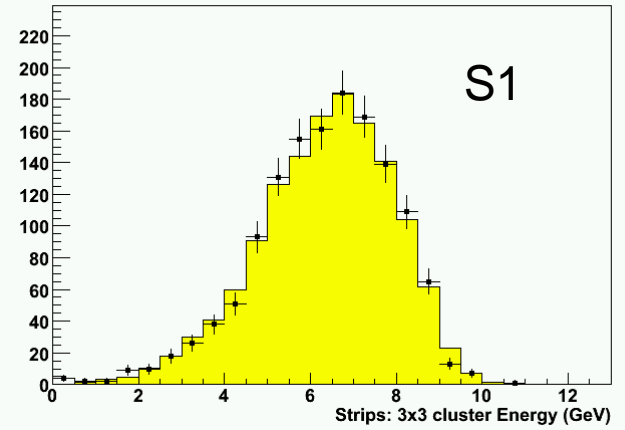
MC: with 0.15X0 far + 0mm Al close material

OFCs: TB-13

Pedestals: Random Triggers



# Data vs MC ONLY far material



## RATIOS

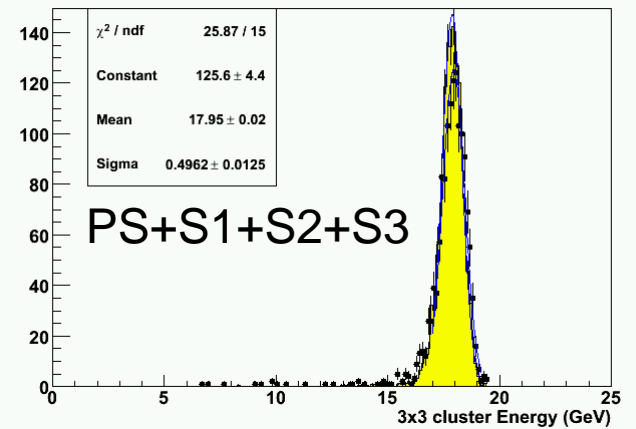
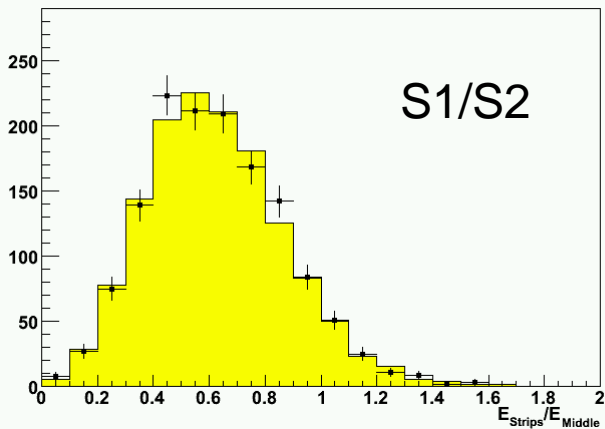
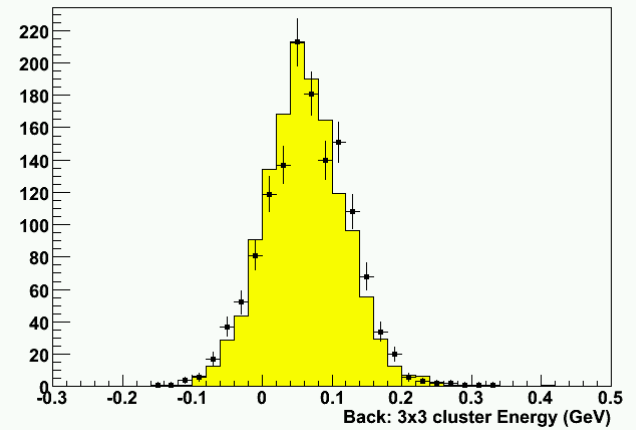
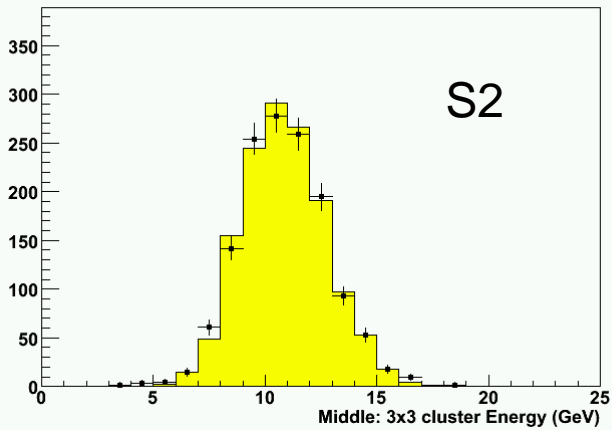
E=20GeV R=1000952

20GeV

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E	1.004
PS	0.997
S1	0.997
S2	0.998
S3	1.037
<b>S1/S2</b>	<b>0.999</b>
S0/S1	1.009

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# Summary

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- ◆ First signs of agreement between data and MC without any extra close material in front of the LAr.
  - The cluster  $\phi_{\text{Rec}}$  was biased and we now use the  $\phi_2$  (the  $\phi$  as reconstructed from sampling 2 for 3x3 emb clusters)
  - The new simulation leads to an increased E1/E2 by a few percent.
  - The PS response is now about 90% of the MC prediction in agreement with expectations (extra material in front of the LAr increases the MC response making hard to explain the difference).
  - The MC is 97% in absolute scale wrt data.
  - The Strip response in data is corrected by 0.91-0.92.
- ◆ First checks from Per Johansson for period 8 with only far upstream material added agree with the results here (including the factors for strips, PS and MC)
- ◆ Original data recon with 11.4.0 for period 5, was picking the wrong OFCs and confused the comparison.