

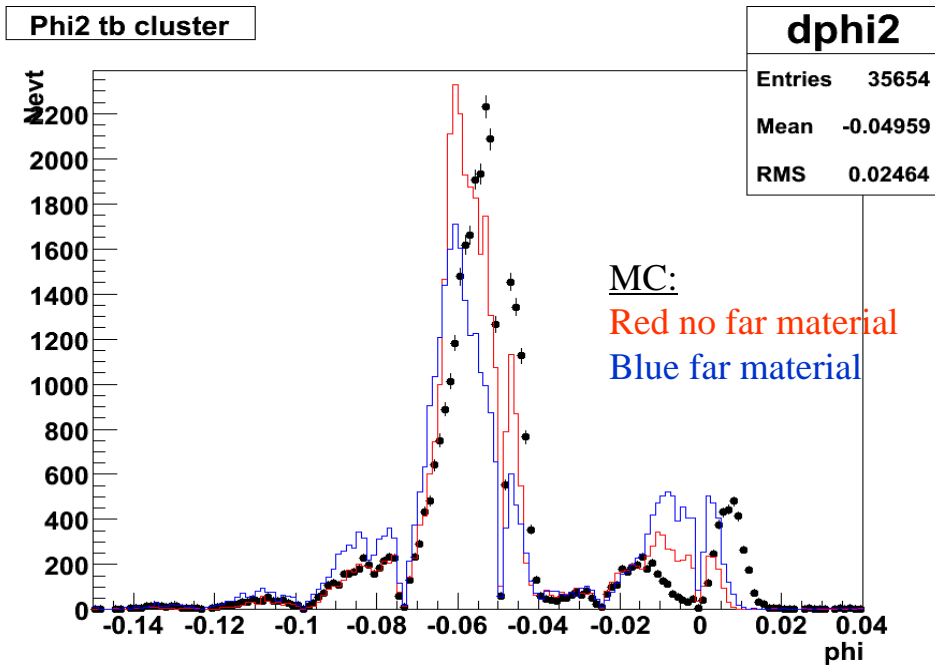
DATA/MC comparison for period 8

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Introduction

- Recap of LAr material problem:
 - No close material is needed, confirmed from period 5, 6 and 8 data
(see presentation by Stathes during physics week, 30 May)
 - How about far material ?!
 - Use period 8 data with magnetic field turned on and compare with MC
 - Run looked at so far is 2413, 20 GeV electrons

Phi distributions



Left:

Phi distribution from tb cluster

All events after pion/mu, beam quality and eta cuts

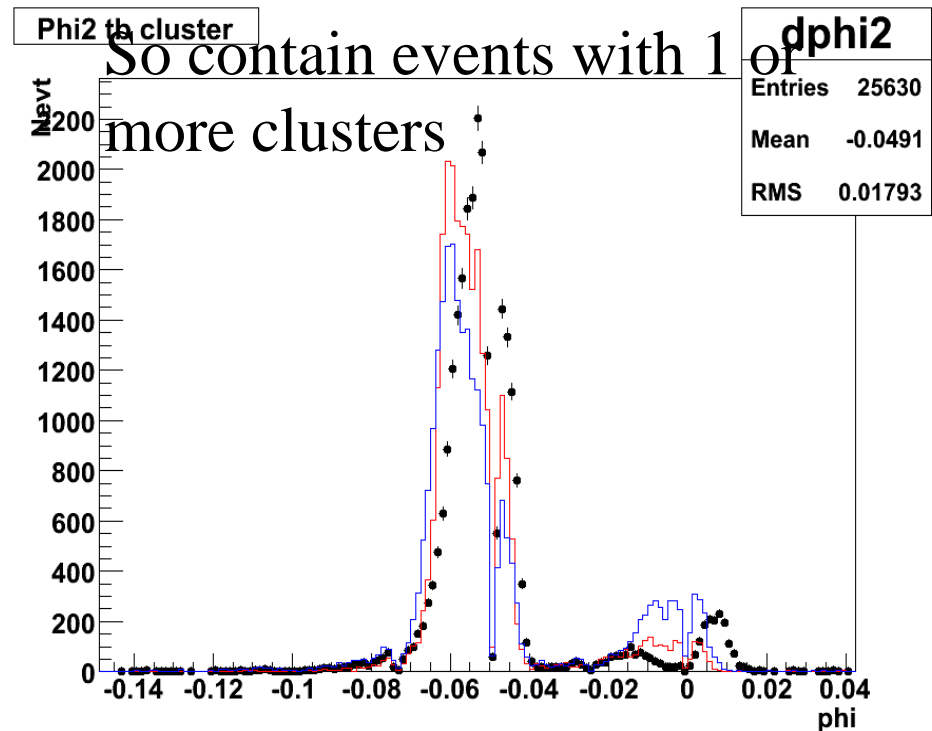
Right:

Phi distribution after selecting events

with only one topocluster

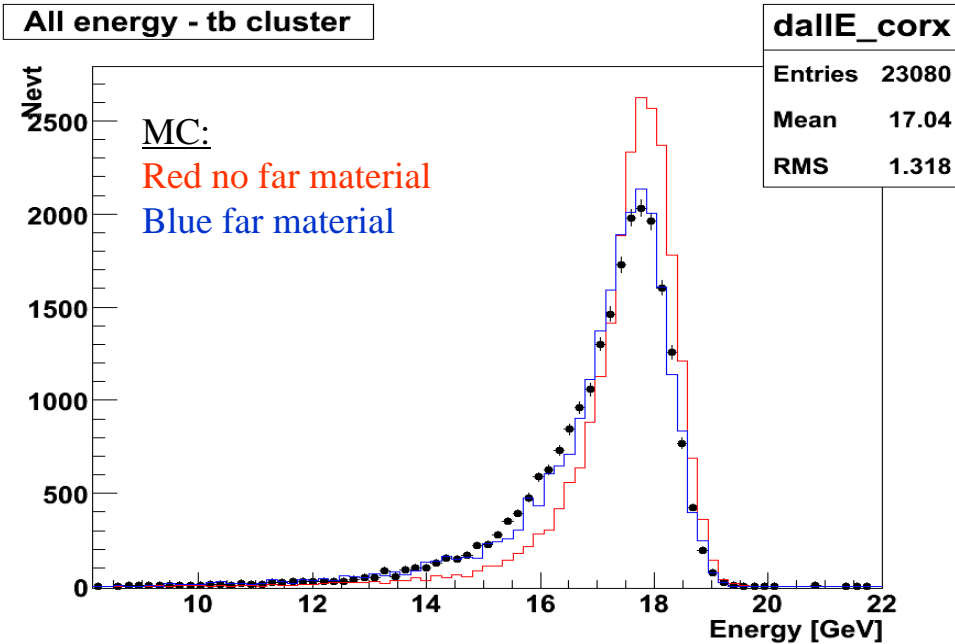
(phi distribution from topocluster is similar)

Events around 0 are photons
where the electron is lost after the



So contain events with 1 or more clusters

Energy distributions



Left:

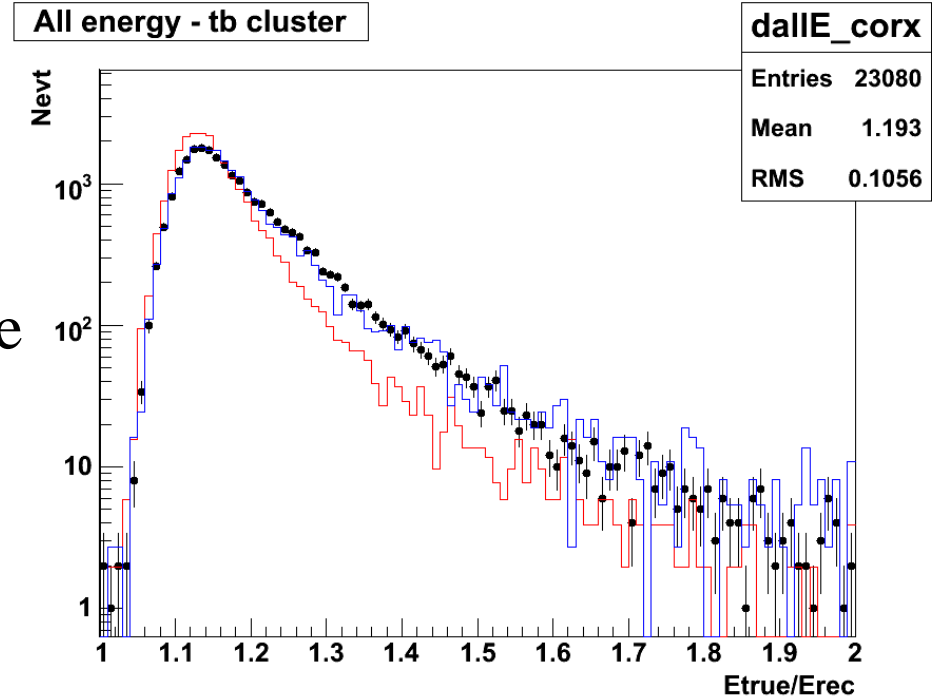
Energy distribution for the selected electrons

MC with material shows good

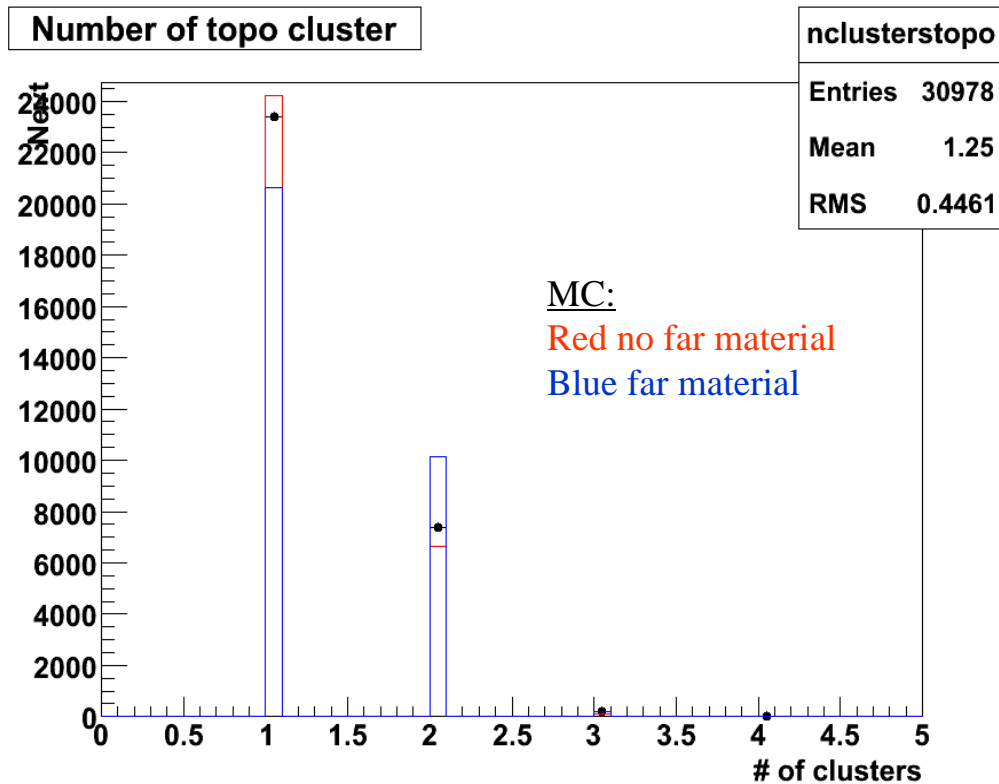
Right:

The true/beam energy divided by the reconstructed energy

The tail in the data is reproduced remarkably well by the MC with material



Number of topoclusters



Left:

Number of topoclusters after pion/mu, beam quality and eta cuts

The number of data events with 2 clusters are lower than for the MC with far material.

However, for the data we would expect to lose photons far upstream in the beamline due to the material.

This is not reproduced in the MC.

Conclusion and outlook

- Used the 2413 run, 20 GeV electrons, with magnetic field to investigate the far upstream material.
- The data electron energy distributions favour the MC case with far material, 0.15X0 consistent with the material in straight beamline (air and windows).
- The brem photons are to some extent lost in the beamline
- Photons that convert in the beamline may be swept away when the B field is turned on.
- The post-brem electron may be lost, and the converted photon may trigger and hit the calorimeter as an e-pair
 - Not simulated in the MC and evident in the B=0 data as a tail in the energy distribution
- Have more runs from period 8 with and without magnetic field to look at, even some with extra material in front of the detector
- Confirm the above results and also have a look at other distributions. e/p. ...