

Study of Single π^0 and γ Reconstruction

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Photon Reconstruction Confusion

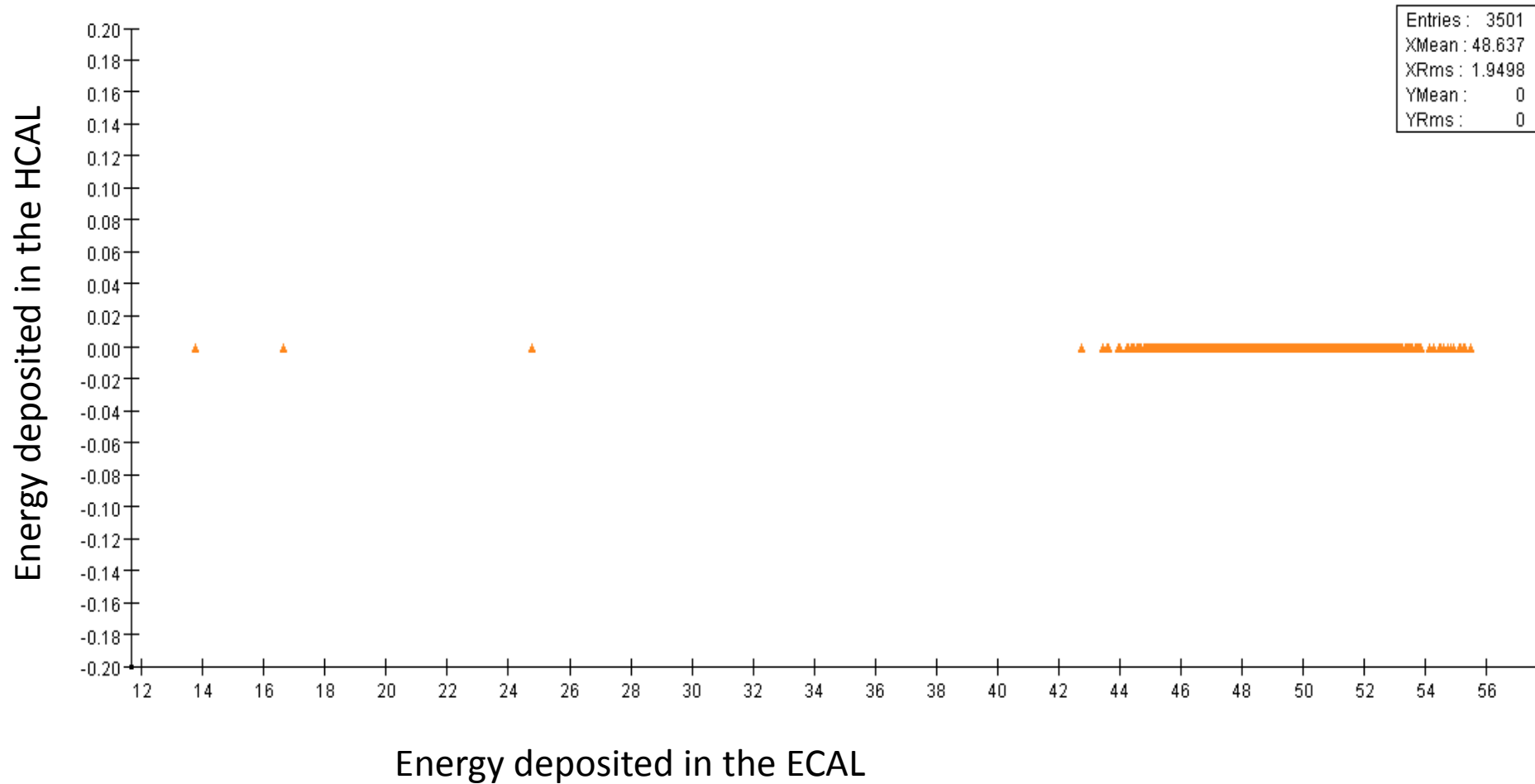
- In our studies of single pi zero and gamma events in sidloi3 using the current Ulowa PFA reconstruction algorithm (v1.18), we find that a large fraction (more than 10%) of the gamma showers are classified as neutral kaons.

Reconstruction Outcomes

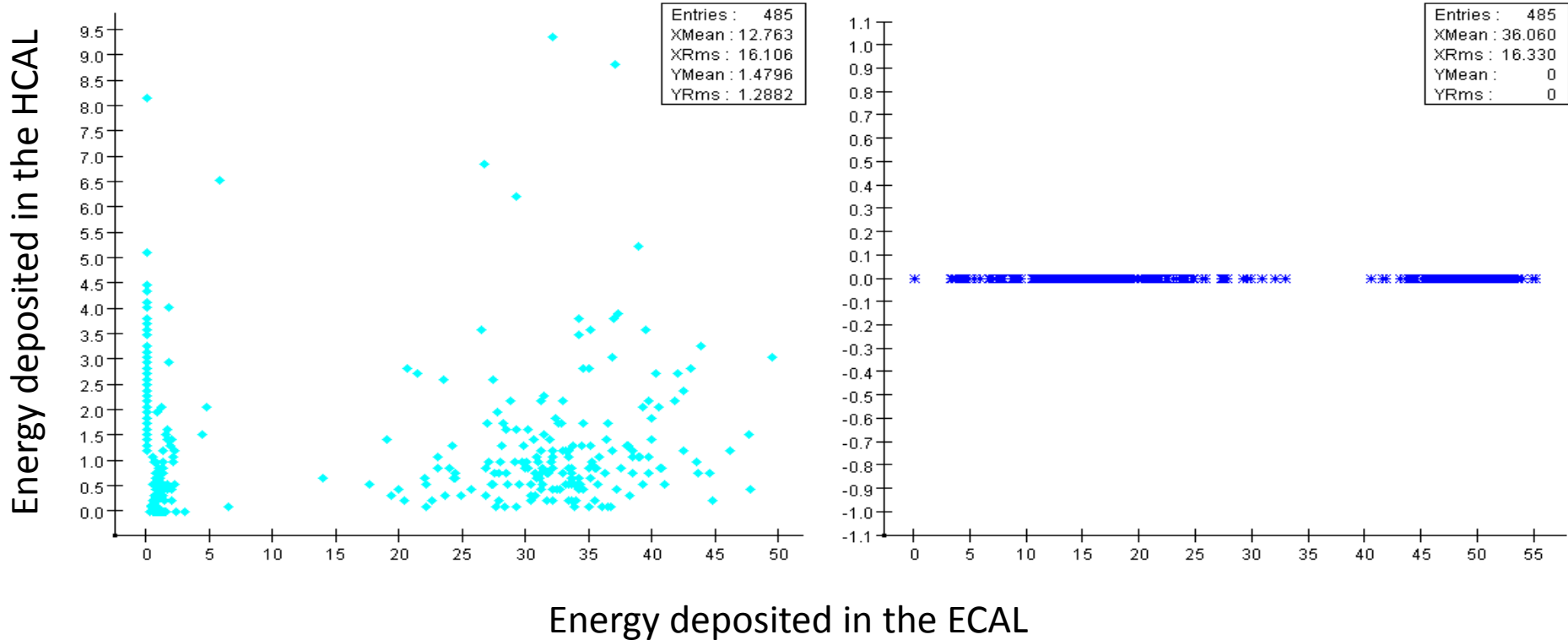
50 GeV π^0 (4138 events)	0 photons	1 photon	2 photons	3+ photons
0 KOL's	0	2134	1222	61
1 KOL	43	499	117	9
2 KOL's	1	38	9	0
3+ KOL's	0	3	2	0

50 GeV γ (4350 events)	0 photons	1 photon	2 photons	3+ photons
0 KOL's	2	3502	52	0
1 KOL	272	485	4	0
2 KOL's	6	20	0	0
3+ KOL's	2	4	1	0

Correctly Reconstructed 50GeV Photons



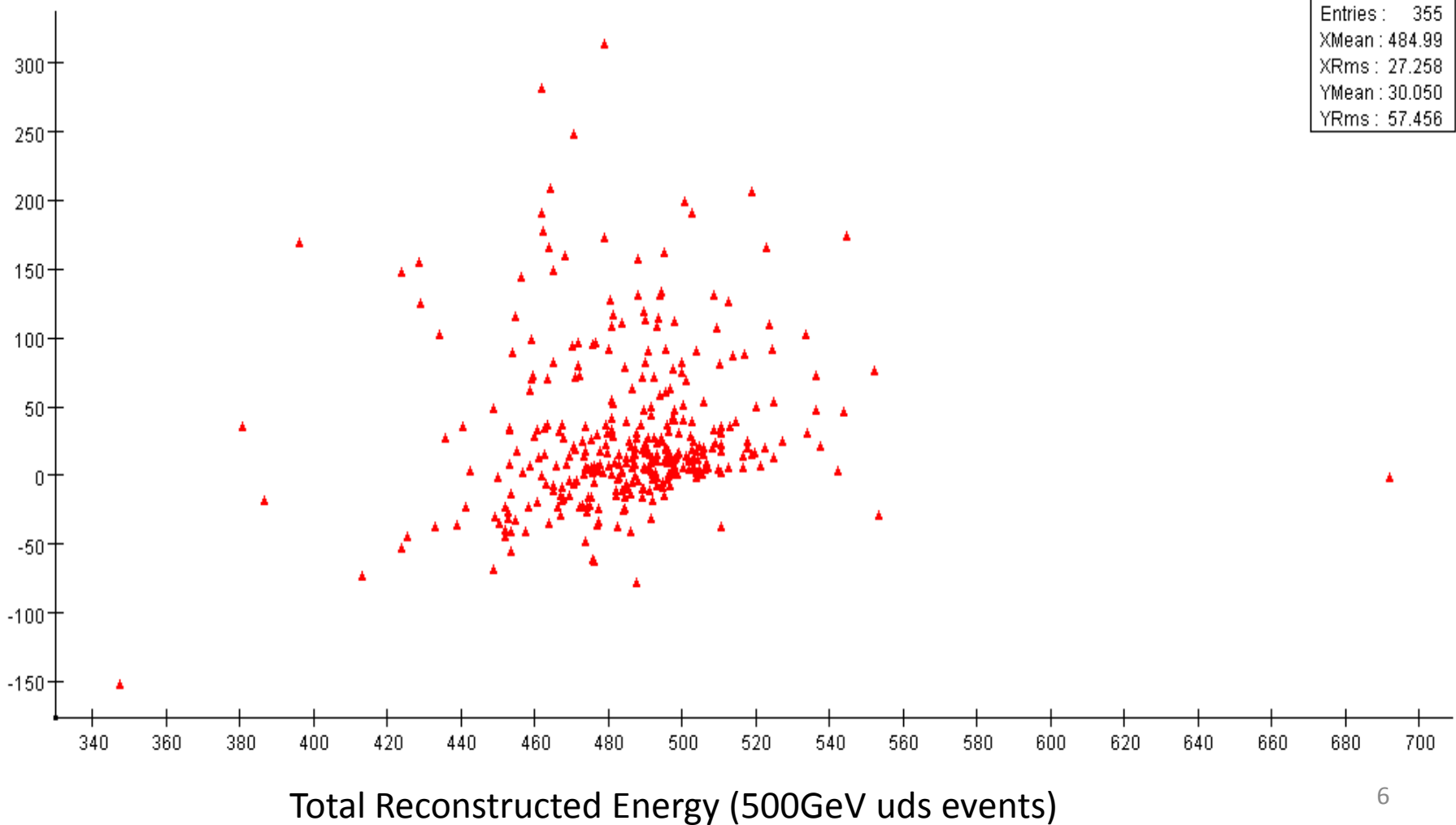
Energy Distribution of Individual Showers for the 1 γ , 1 KOL interpretation (50GeV single photon events)



The particles that are reconstructed as KOL's (light blue) fall into two classes: those that have a large fraction of the energy in the ECAL (more total energy), or a much smaller fraction of the energy in the ECAL (very little total energy). On the other hand, the particles that are reconstructed as photons (dark blue) deposit all of their energy in the ECAL.

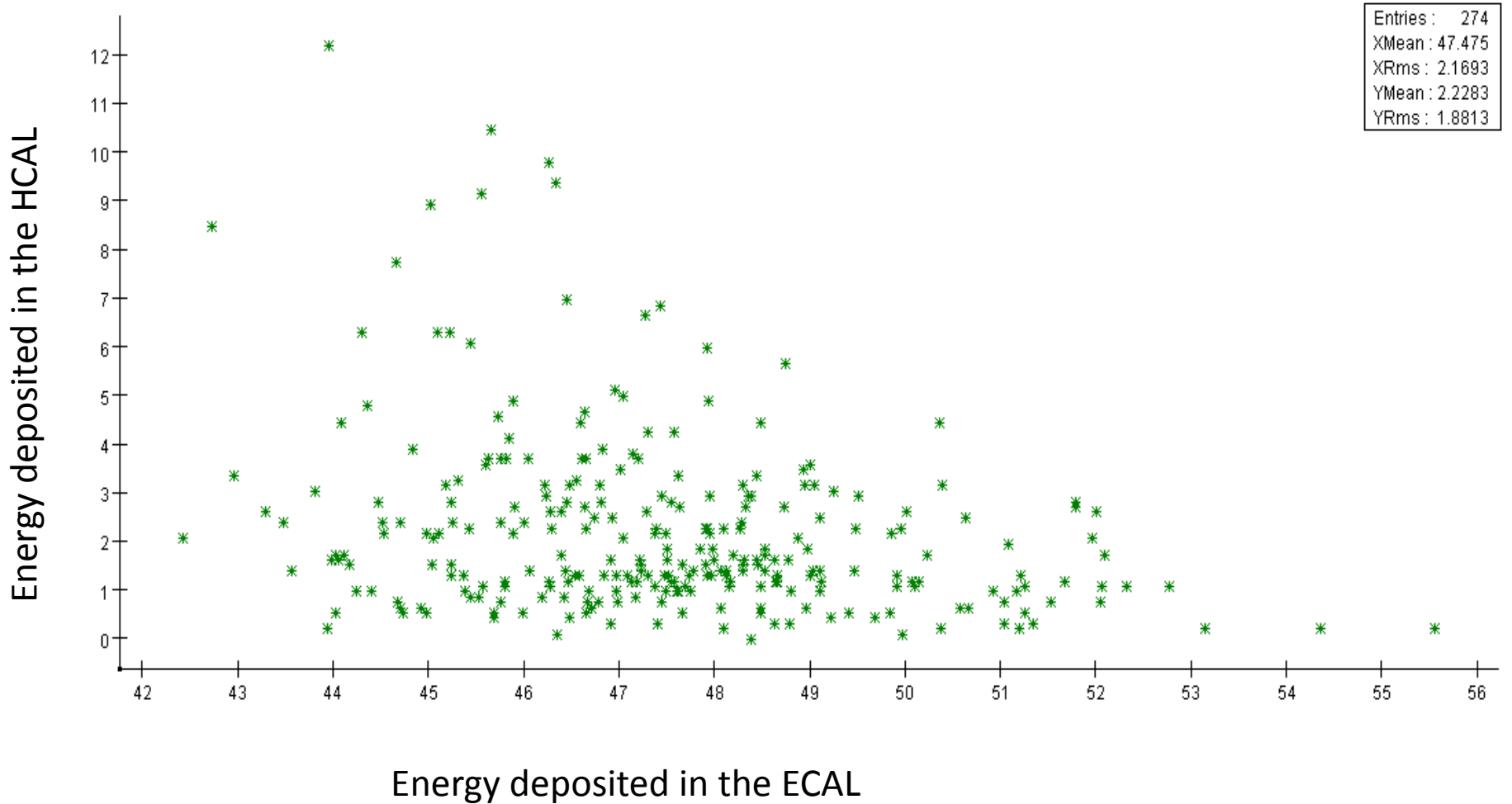
Does this Affect Total Energy Resolution ?

Reconstructed K0_L Energy - Monte Carlo K0_L and Neutron Energy



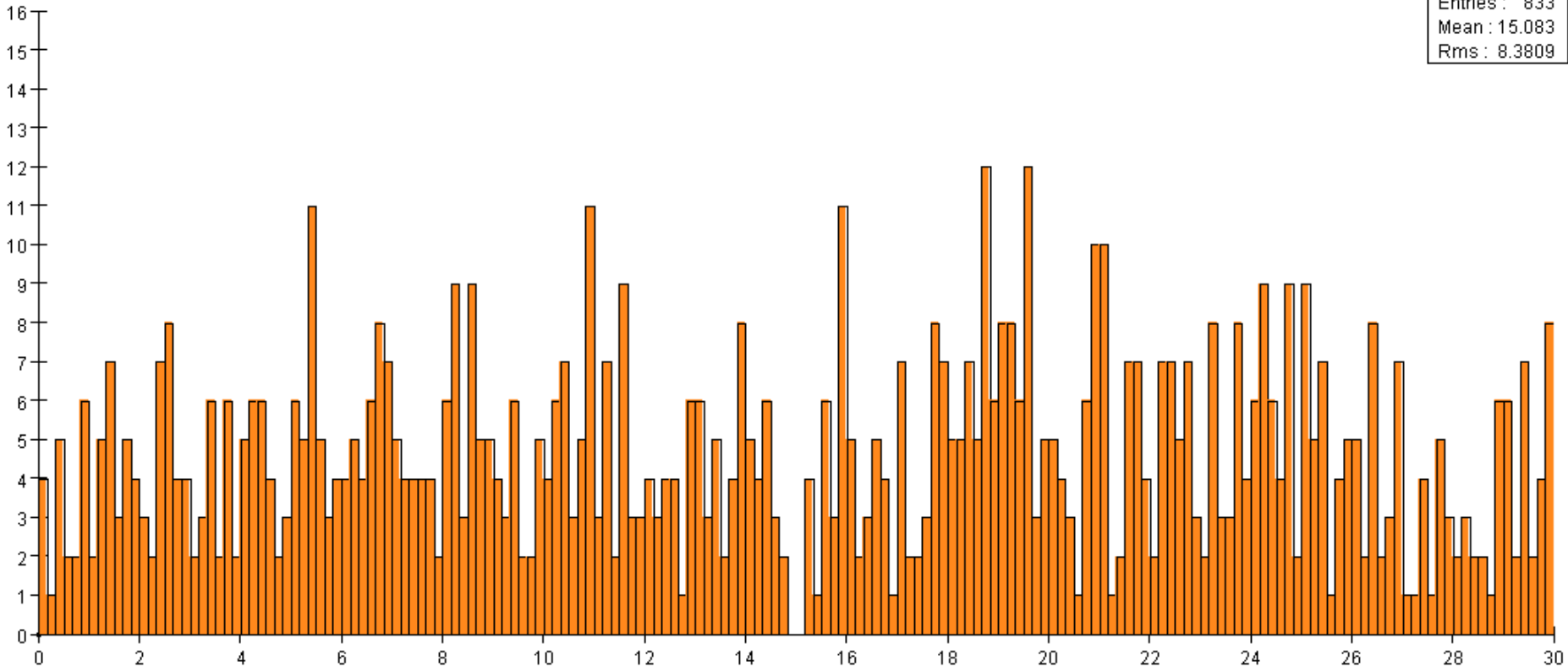
Backup Slides

50GeV "K0_L's"



Phi Distribution of K0_L's - 50GeV Single Photon Events

Entries : 833
Mean : 15.083
Rms : 8.3809



(folded about the twelve-fold symmetry of the ECAL – the corners are at 15 degrees)