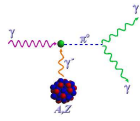


# Timing and TAGM Selection

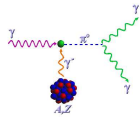
Dustin McNulty  
PrimEx Collaboration  
MIT/Jlab  
*mcnulty@jlab.org*

September 9, 2005



## Complicated versus Simple

- **Complicated:** First, perform geometry dependent cluster time calibration based on minimizing the peak time difference between cluster and tagm photons. Second, form lists between time-linked clusters and tagm. Third, loop over lists and compile list of TAGM candidates.
- **Simple:** Determine peak time difference between HyCal totalSum trigger and TAGM photons. Select TAGM candidates within a time window centered at time difference (regardless of cluster times).



## Cluster Timing Algorithm: Example results

EXAMPLE  
Event 62953  
Run 5058, Carbon

HTRIGT:

row	id	TDC
0	3	25030
1	6	25029
2	9	509
3	12	509
4	13	478

HYCALCLUSTER:

row	scheme	nhtits	id	E
0	5	10	13	2.054
1	5	14	1166	2.214

HTRIGTCLUSTER\_ASSOC:

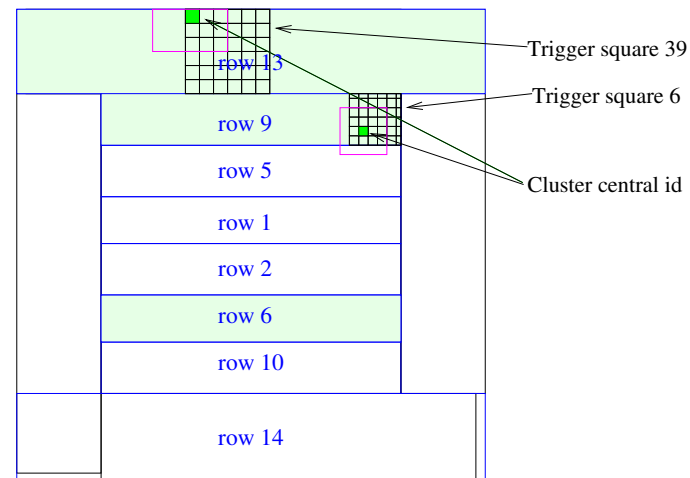
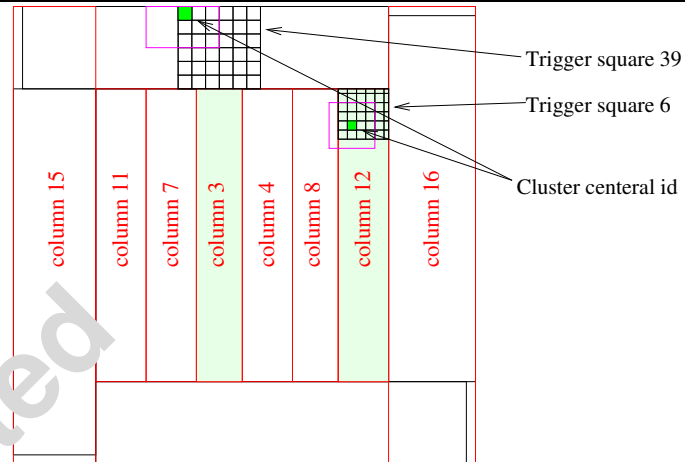
row	htrigt_row	cluster_row	time(ns)
0	13	1	7.54
1	9	2	7.51
2	12	2	7.69

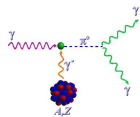
CLUST\_CLUSTER\_TLINKS:

row	cluster1_row	cluster2_row	tdiff(ns)
0	1	2	0.05

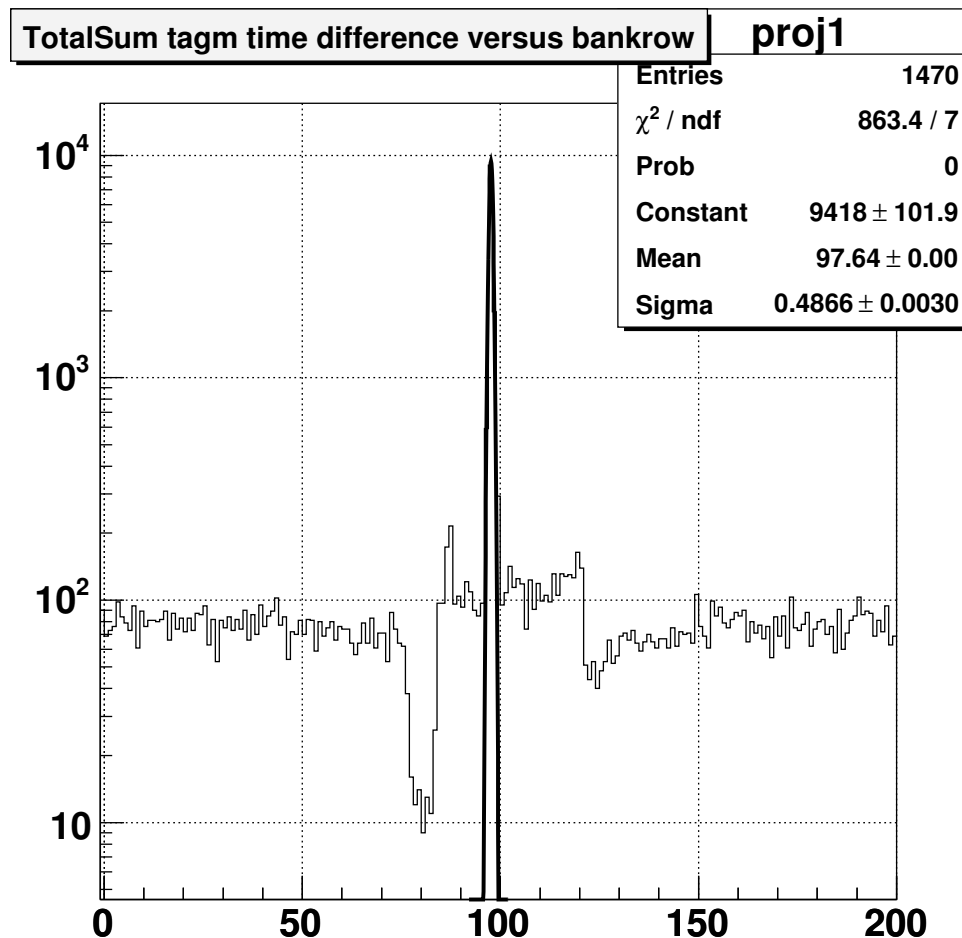
CLUST\_TAGM\_TLINKS:

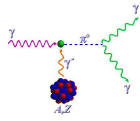
row	tagm_row	cluster_row	tdiff(ns)
0	67	1	7.54
1	67	2	7.60



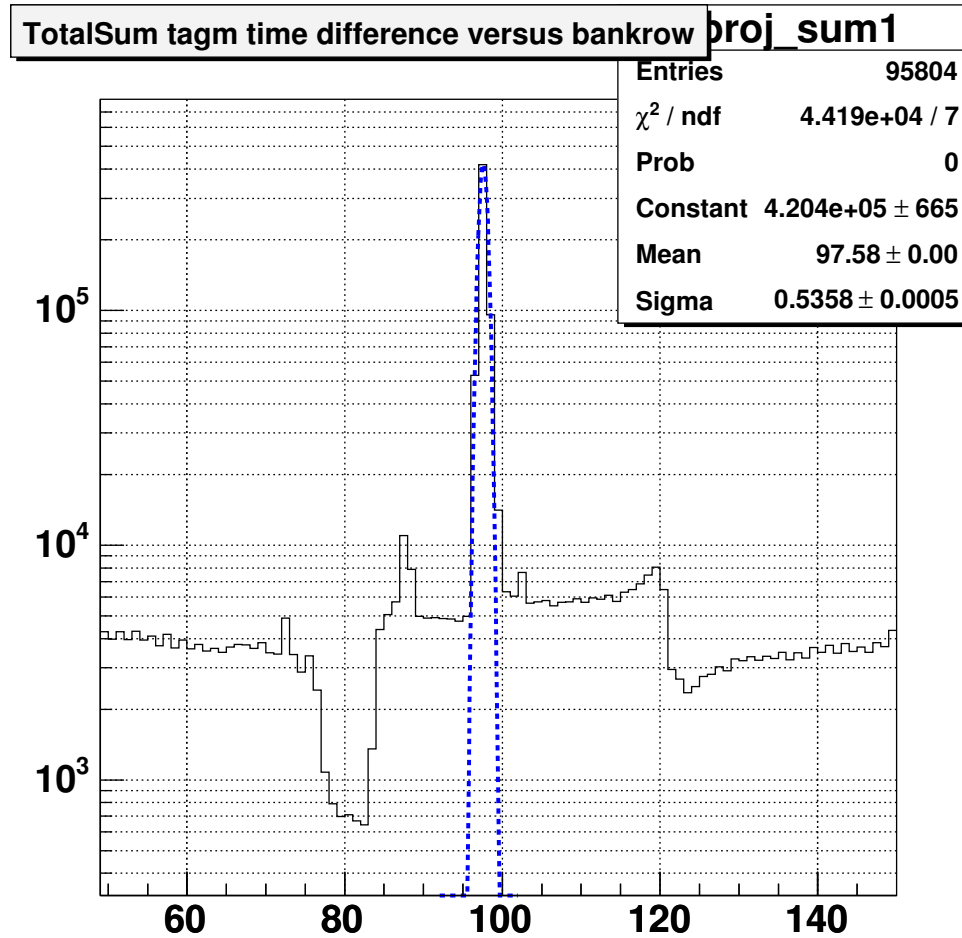


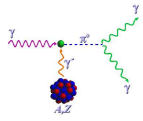
## (HyCal TotalSum - TAGM[i].t) time difference



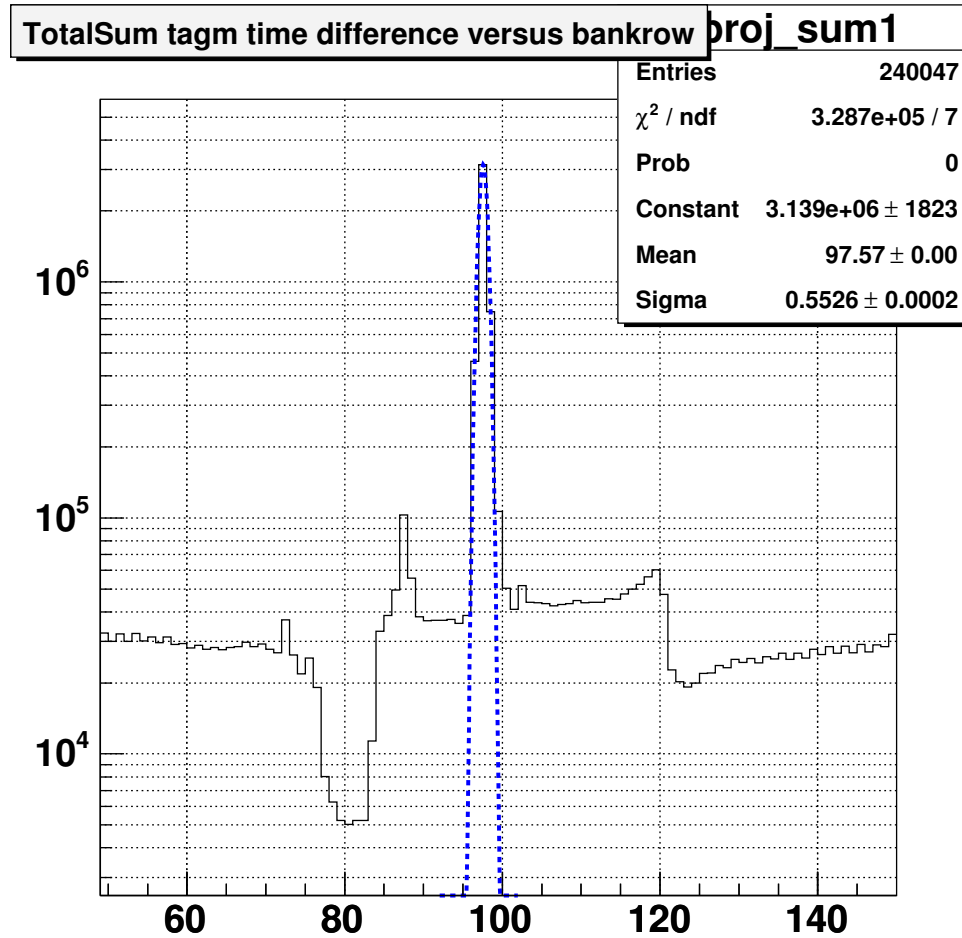


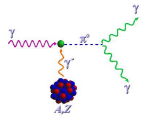
## (HyCal TotalSum - TAGM[i].t) LEAD, all 80 runs



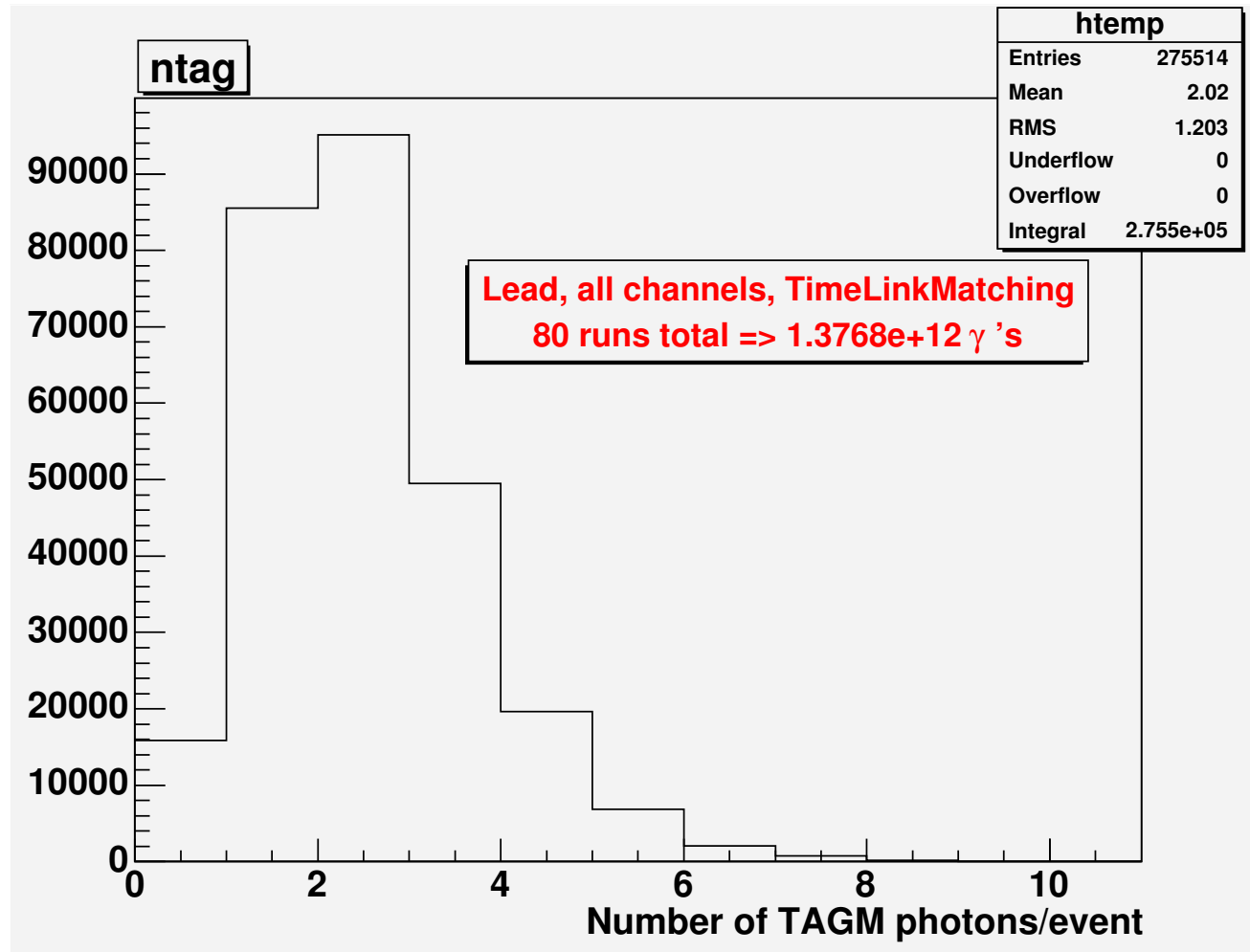


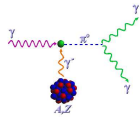
## (HyCal TotalSum - TAGM[i].t) CARBON, all 181 runs



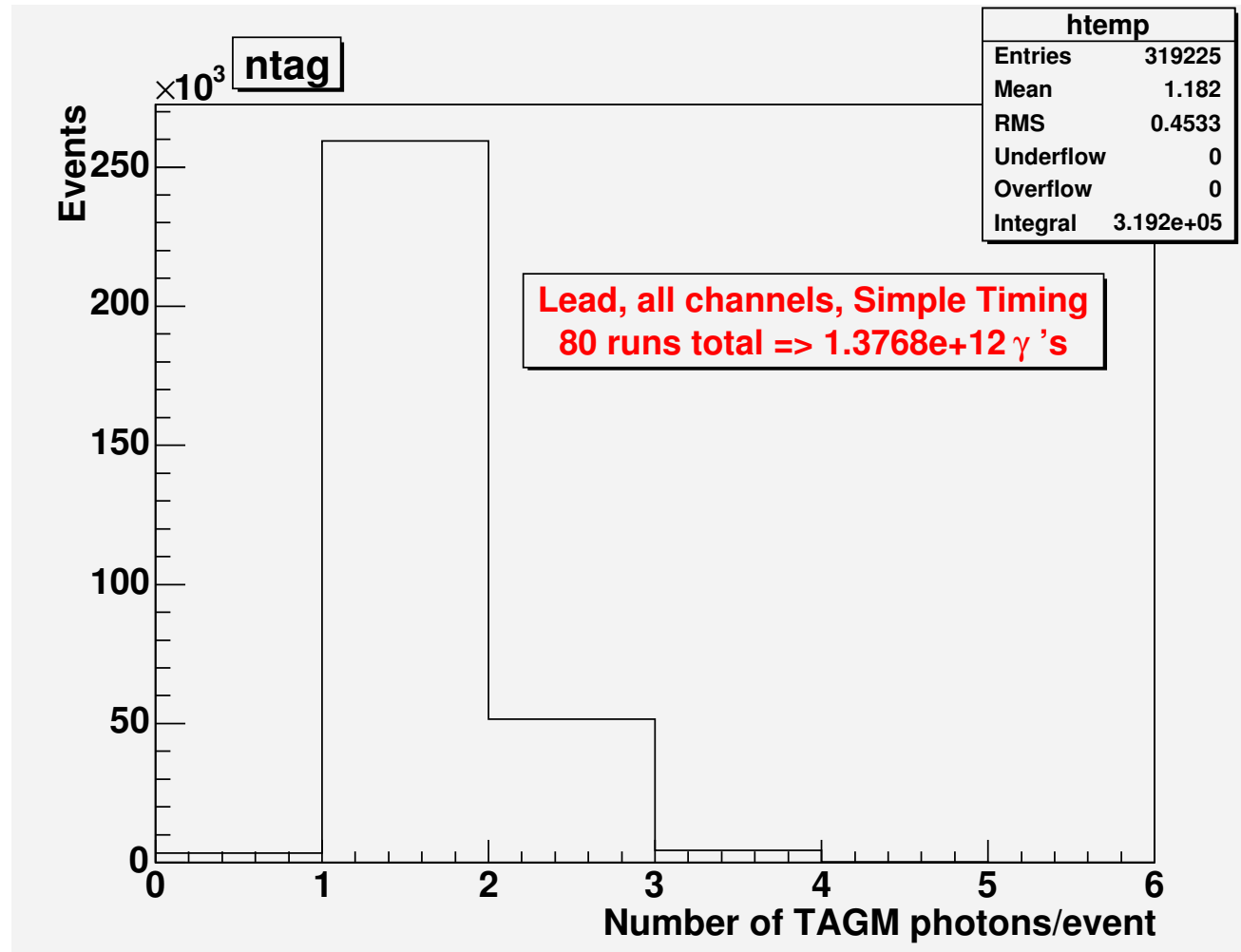


## Complicated Algorithm Result Using +/- 30ns link-windows

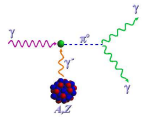




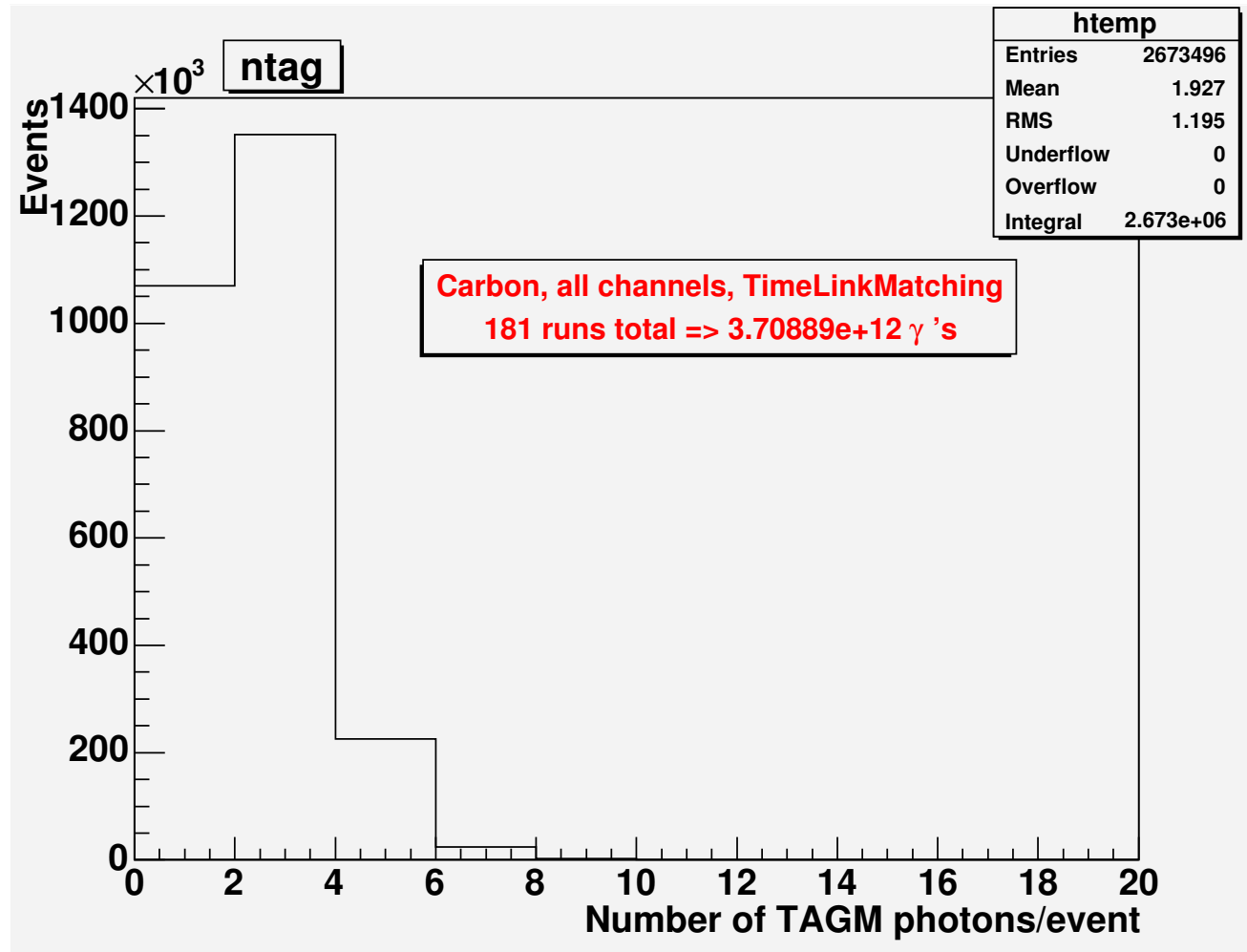
## Simple Algorithm Result Using +/- 16ns time window

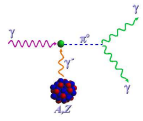




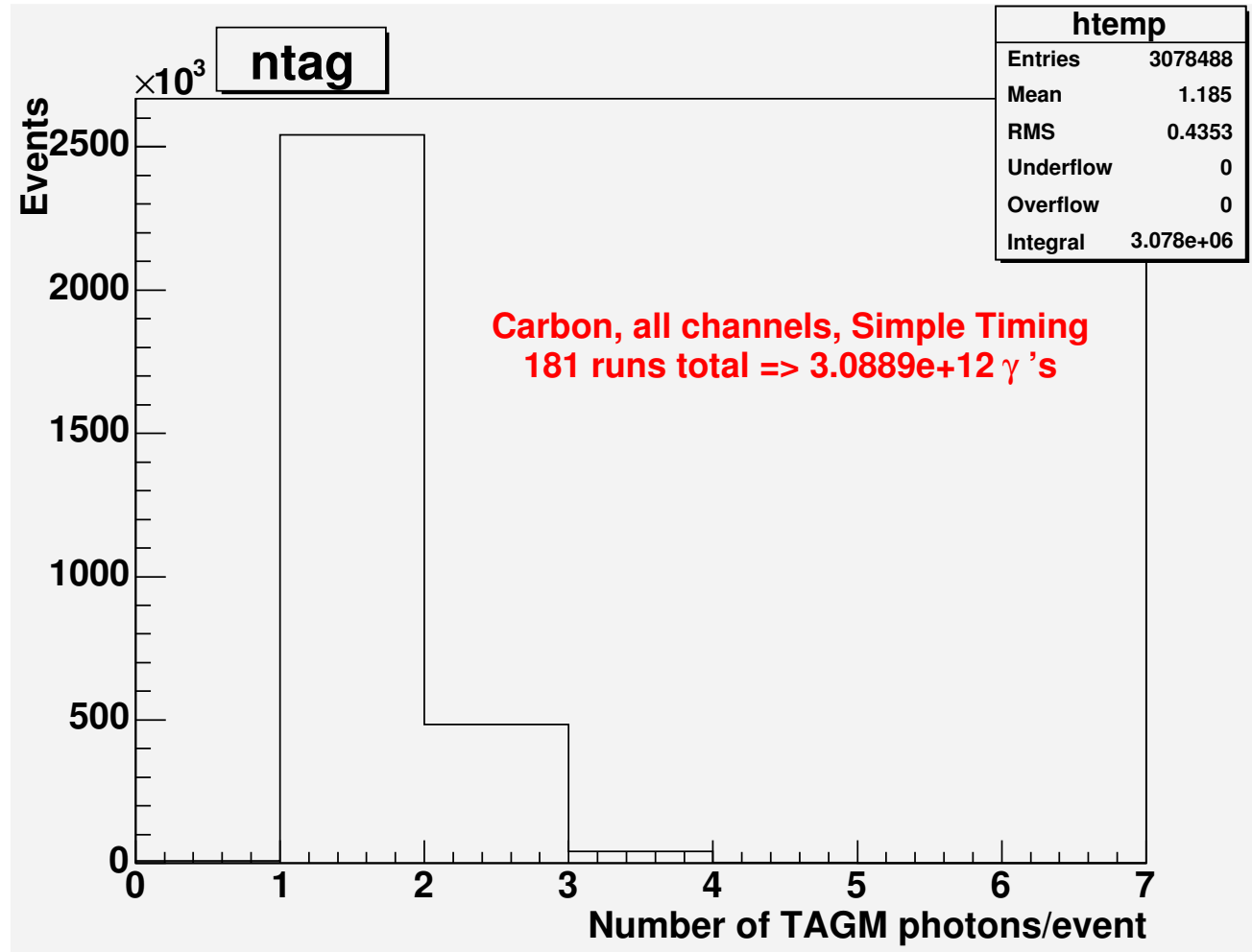


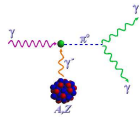
# Complicated Algorithm Result Using +/- 30ns link-windows



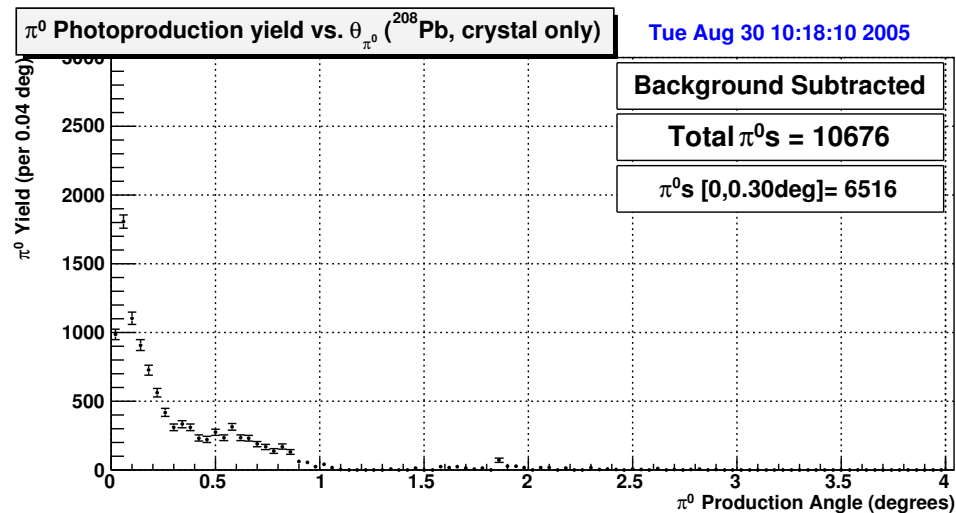
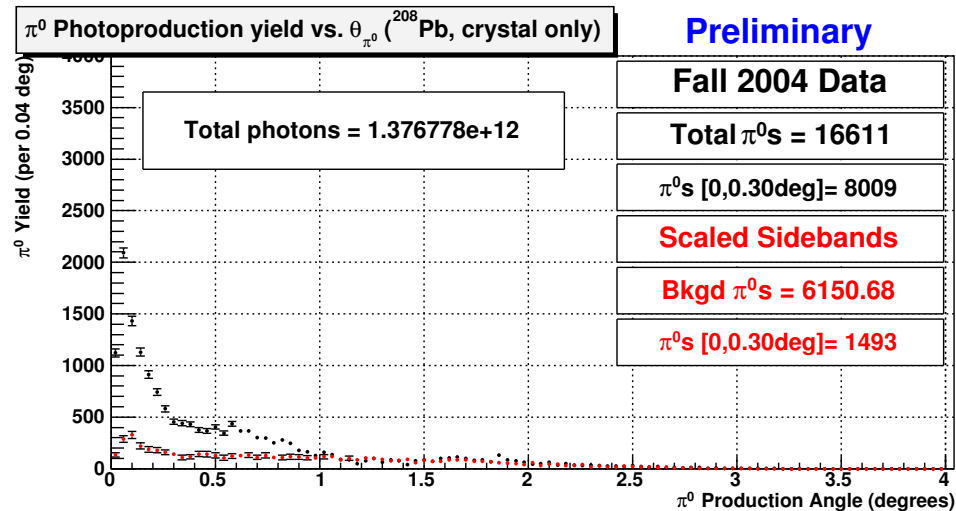


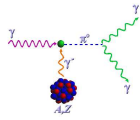
## Simple Algorithm Result Using +/- 16ns time window



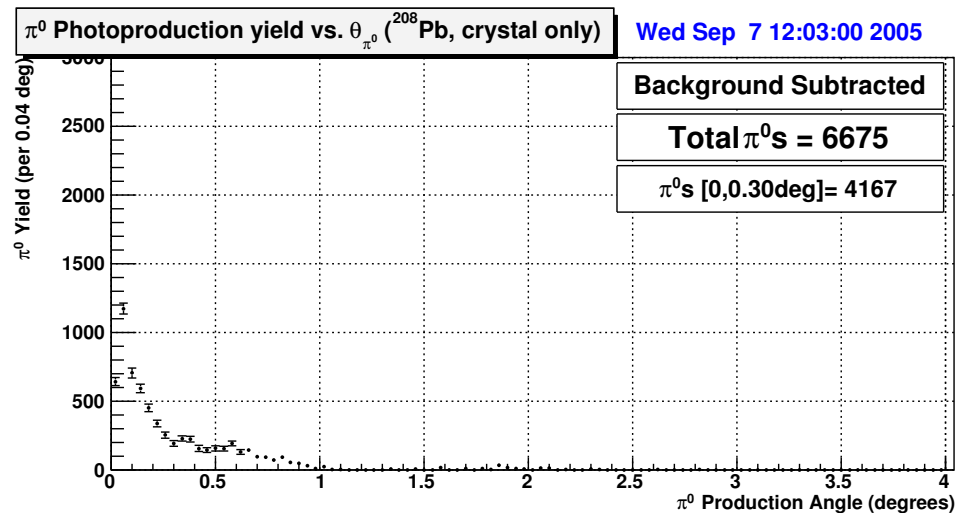
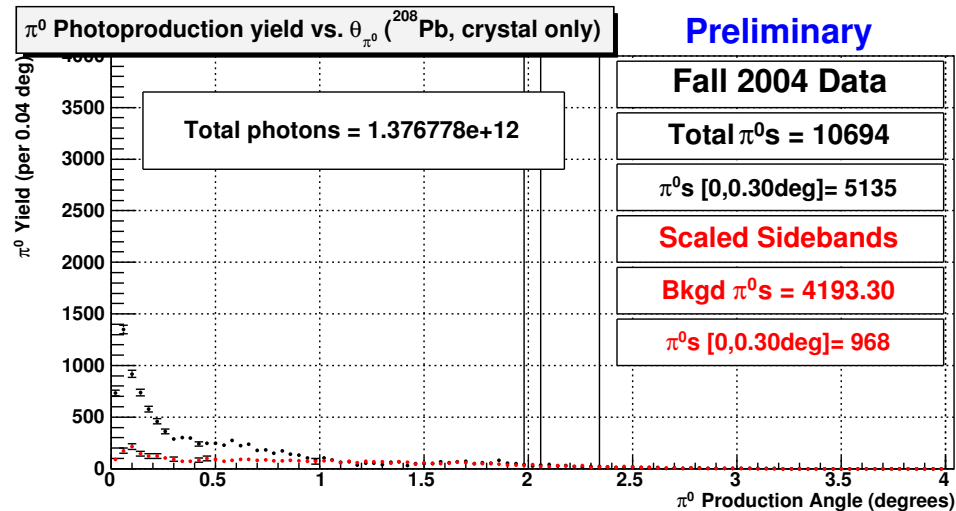


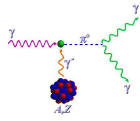
## Complicated Algorithm $\pi^0$ Yield Results: LEAD



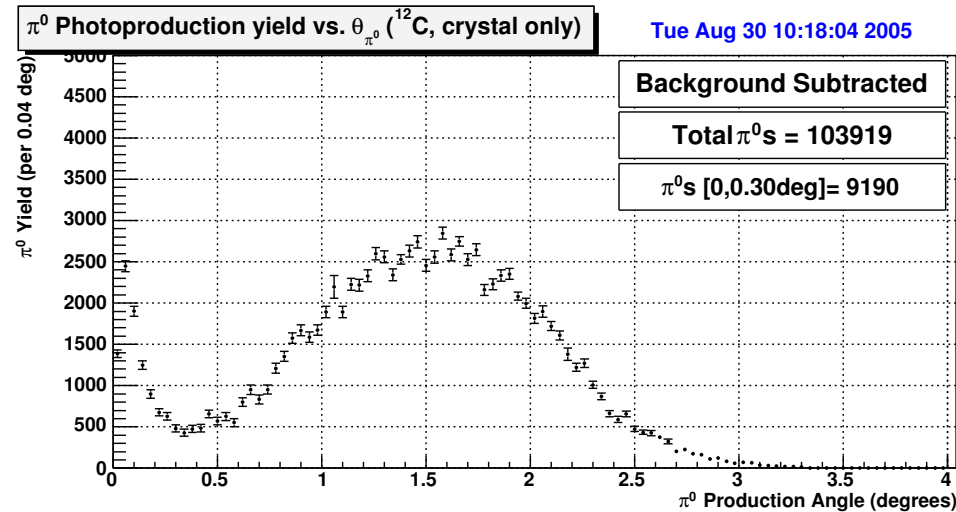
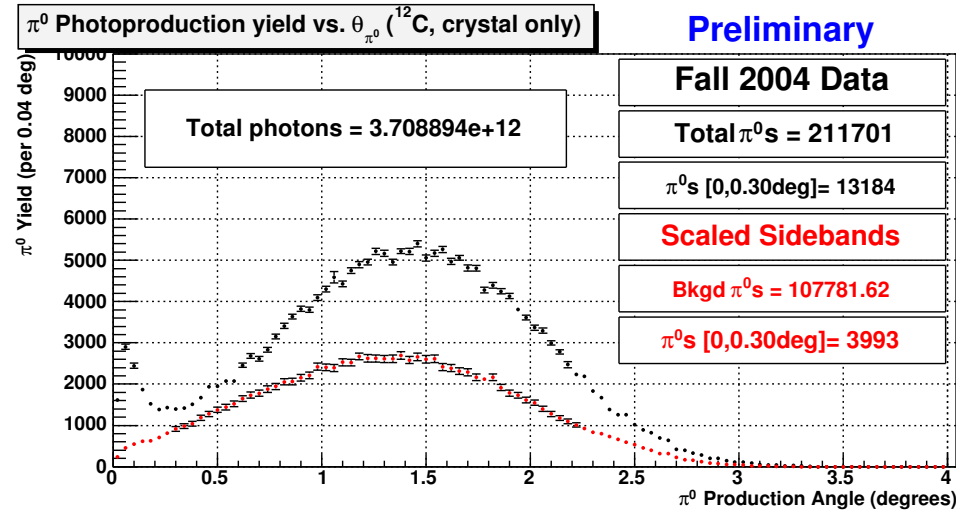


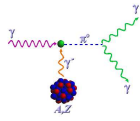
## Simple Algorithm $\pi^0$ Yield Results: LEAD



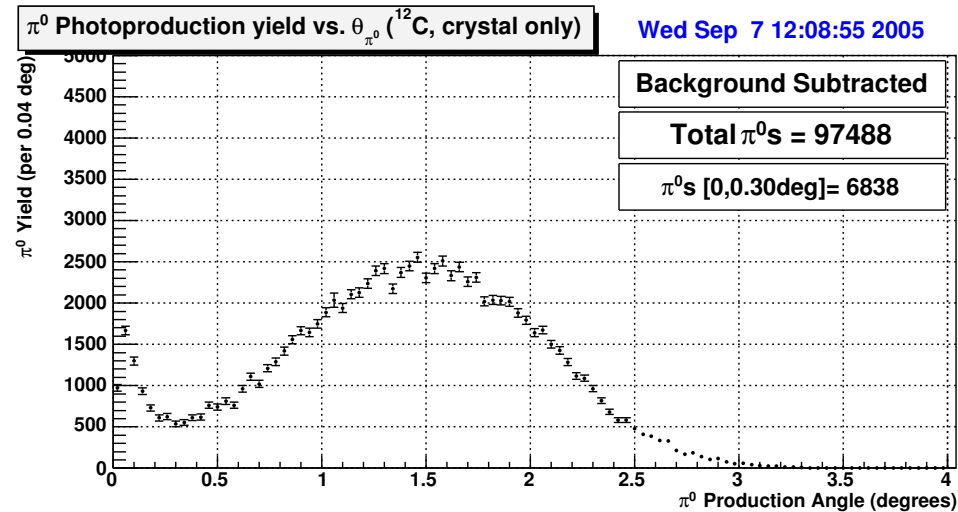
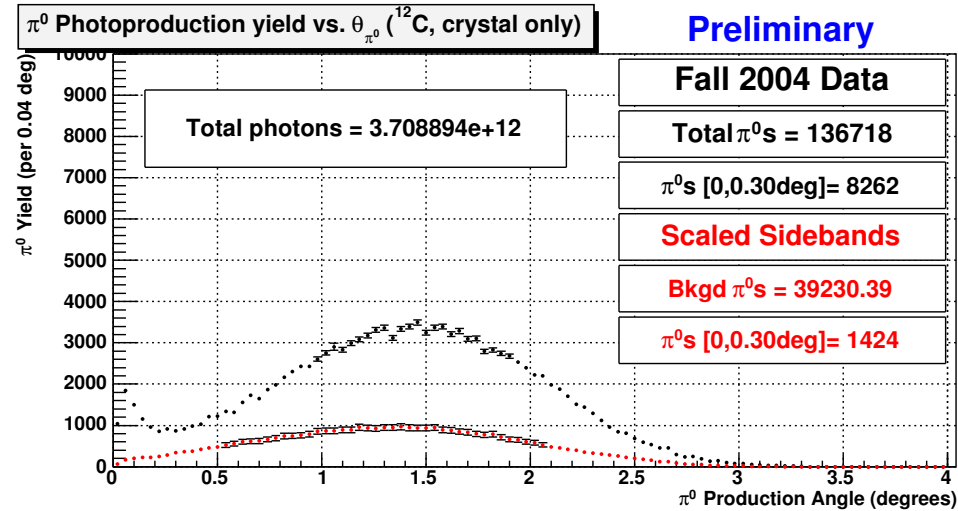


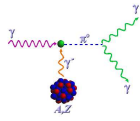
## Complicated Algorithm $\pi^0$ Yield Results: CARBON



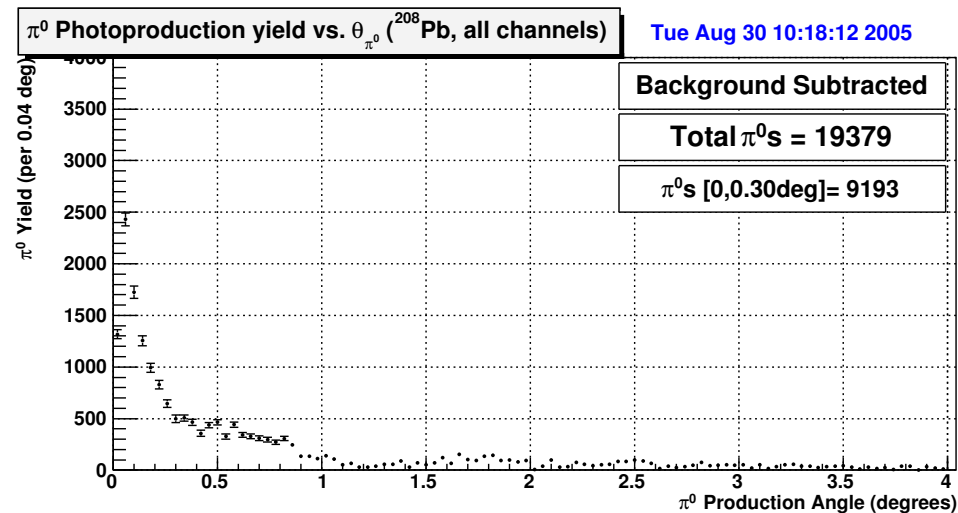
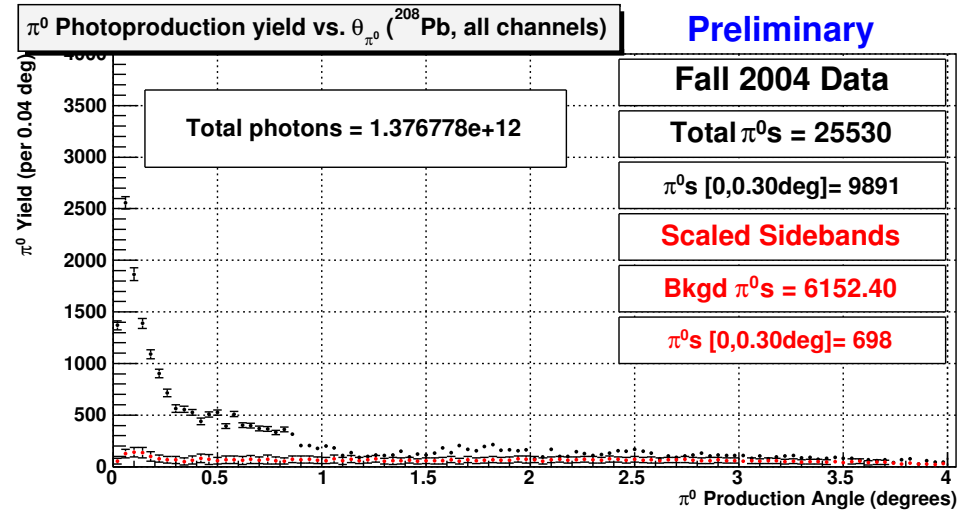


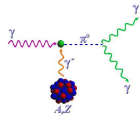
## Simple Algorithm $\pi^0$ Yield Results: CARBON



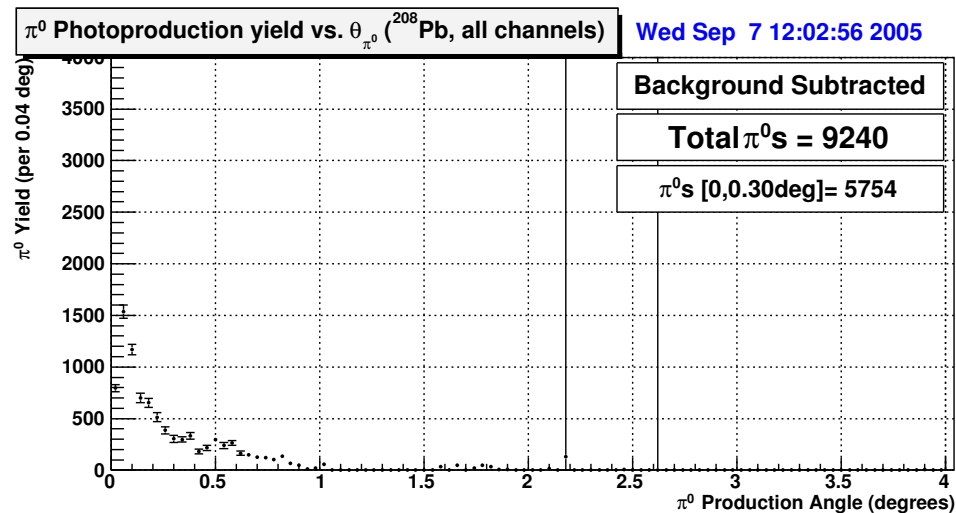
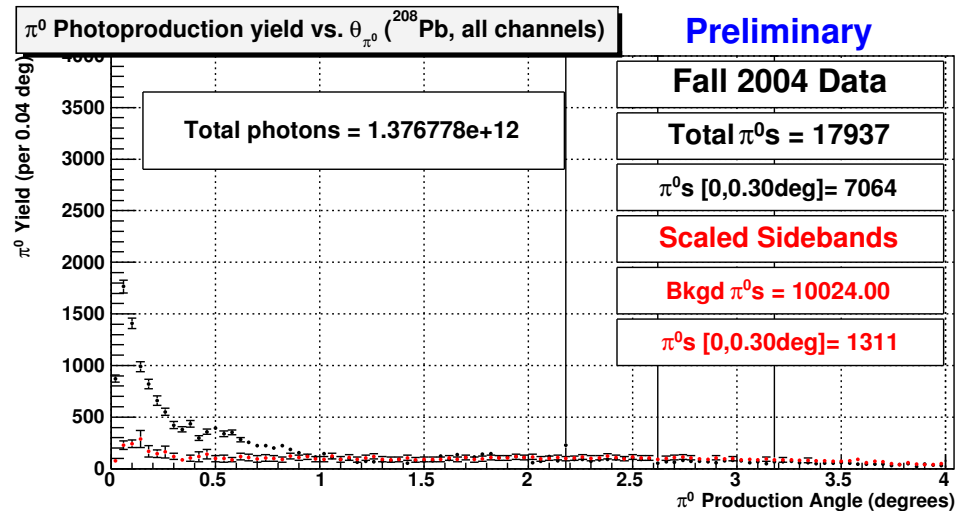


## Complicated Algorithm $\pi^0$ Yield Results: LEAD

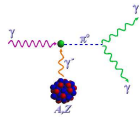




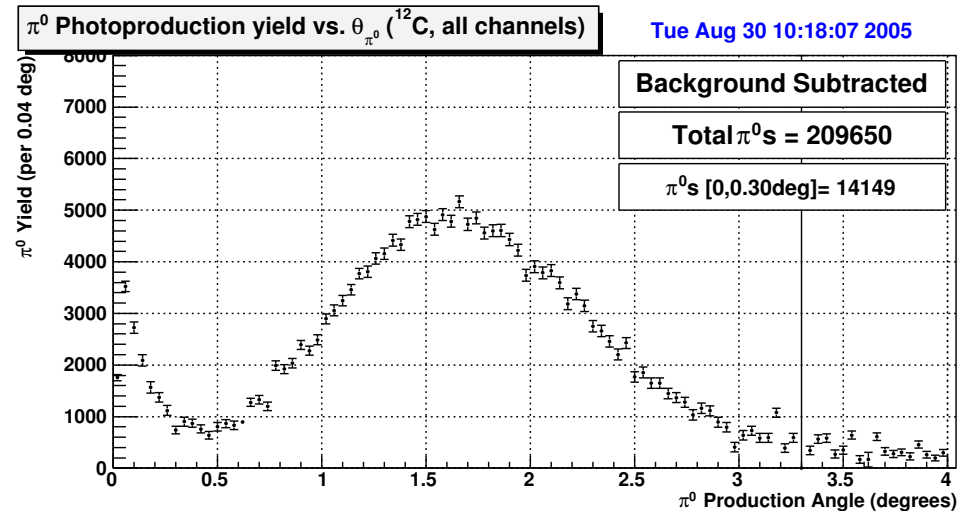
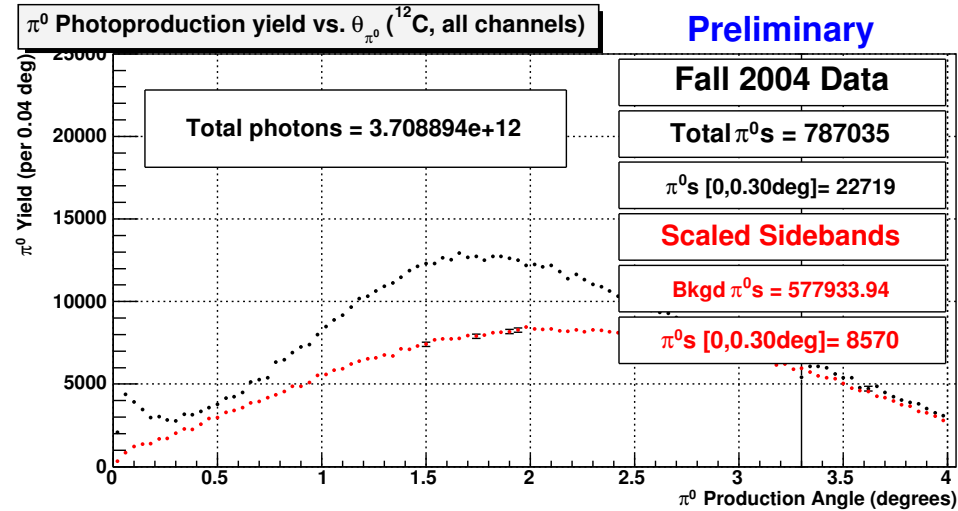
## Simple Algorithm $\pi^0$ Yield Results: LEAD

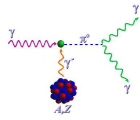






## Complicated Algorithm $\pi^0$ Yield Results: CARBON





## Simple Algorithm $\pi^0$ Yield Results: CARBON

