BCAL Split-off Update

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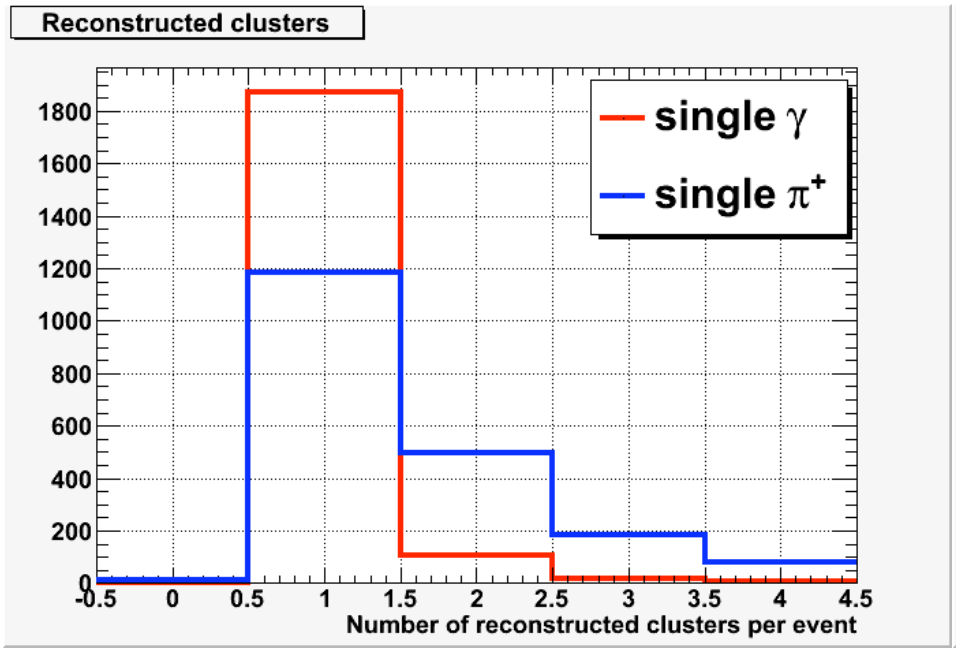
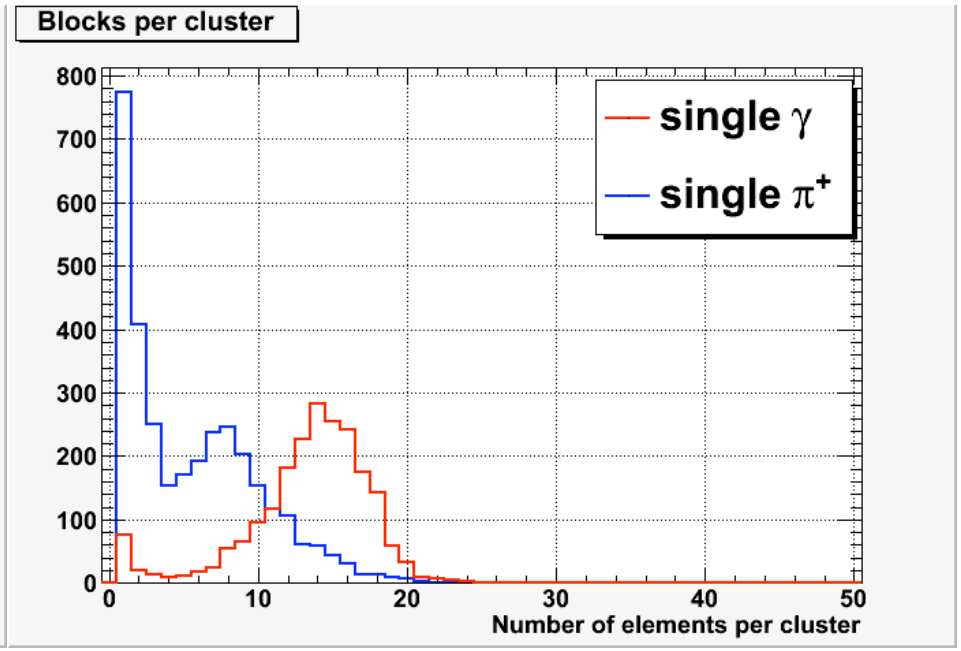
March 29, 2010

Reconstructed clusters

- Two sets of single particle events were simulated and reconstructed in the BCAL (θ=14°-60°).

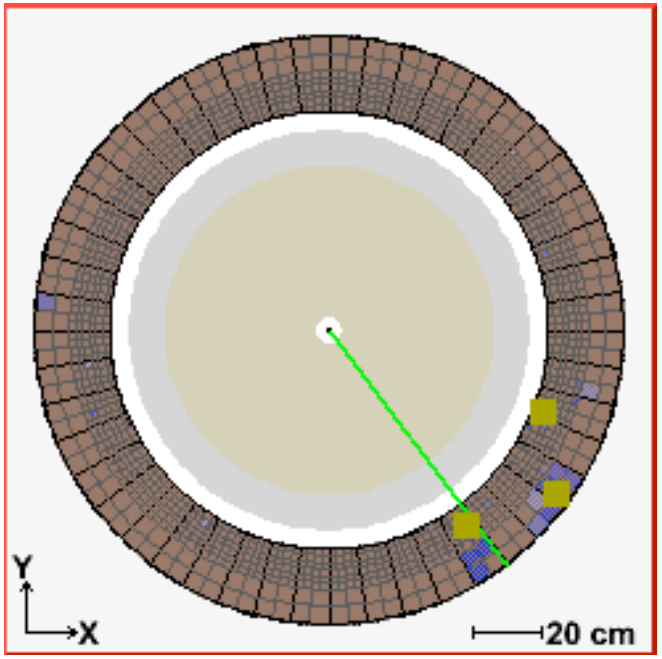
- All events should ideally have a single shower.



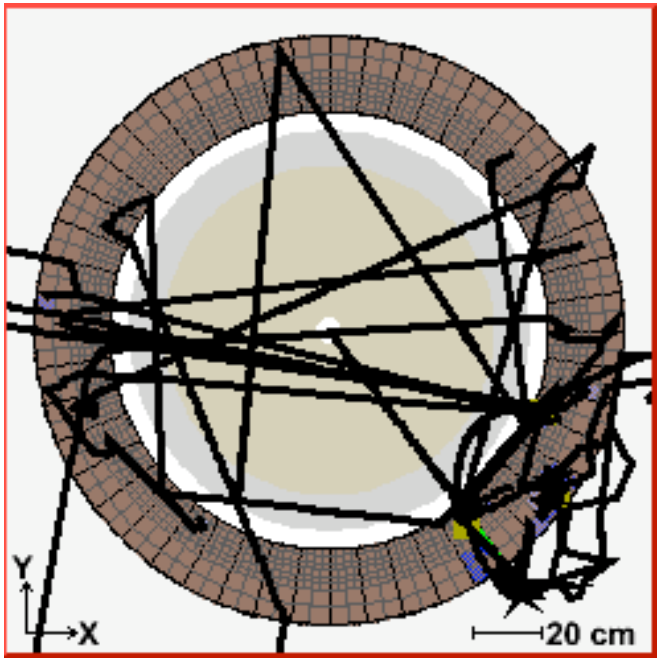


Single photon event w/ multiple clusters

Without trajectory points drawn

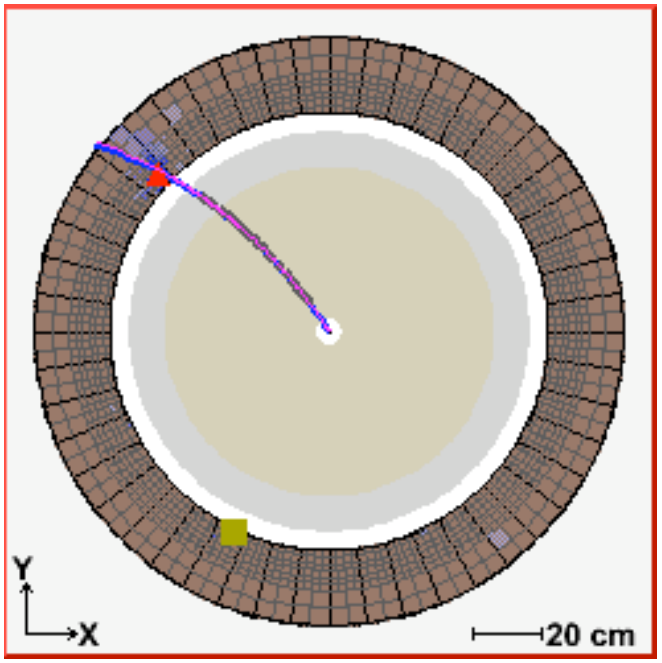


With trajectory points drawn

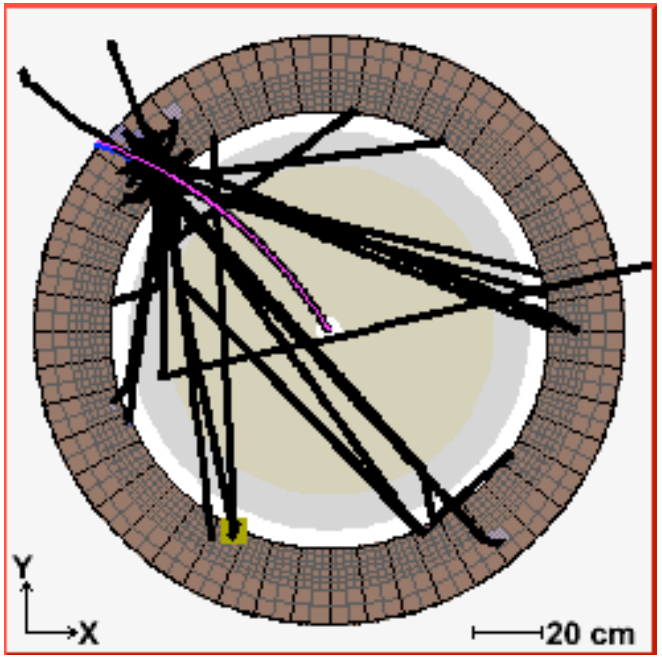


Single pi+ event w/ multiple clusters

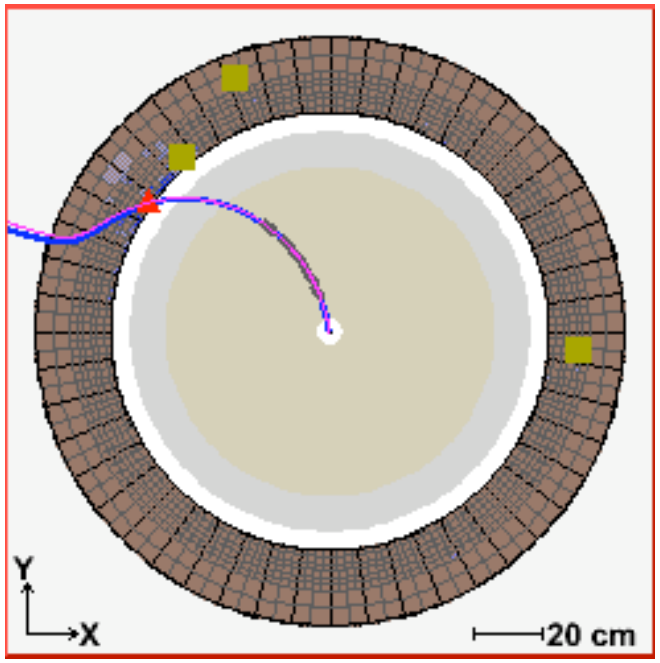
Without trajectory points drawn



With trajectory points drawn



Another pi+ event



Reconstructed

trk:	type:	p:	theta:	phi:	z:
1	gamma	0.02943	19.77	1.931	65
2	gamma	0.05763	13.07	2.275	65
3	gamma	0.3662	15.78	2.518	65
4	gamma	0.03067	12.53	6.201	65

Dolby-C method

- CB Note 199 , 28/8/1992 (GlueX-doc-1447)
- Uses energy asymmetry to opening angle correlation to identify likely splitoffs
- $A = (E_1-E_2)/(E_1+E_2)$
- ψ = opening angle between two "photons" (assuming they came from target vertex)

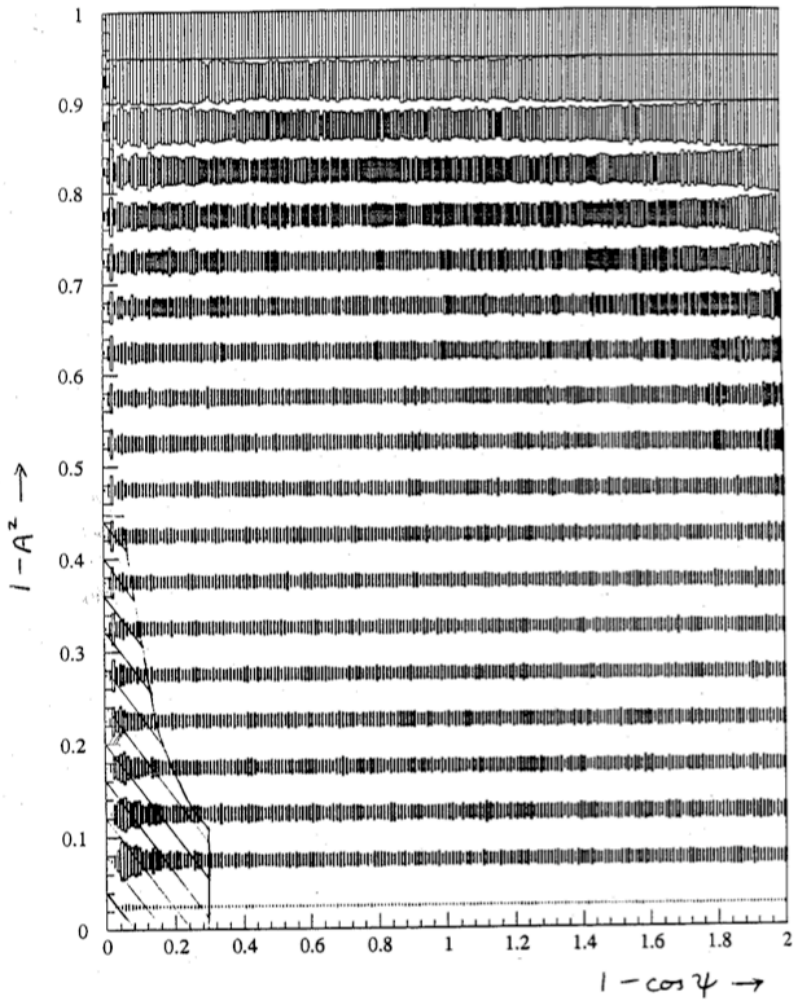
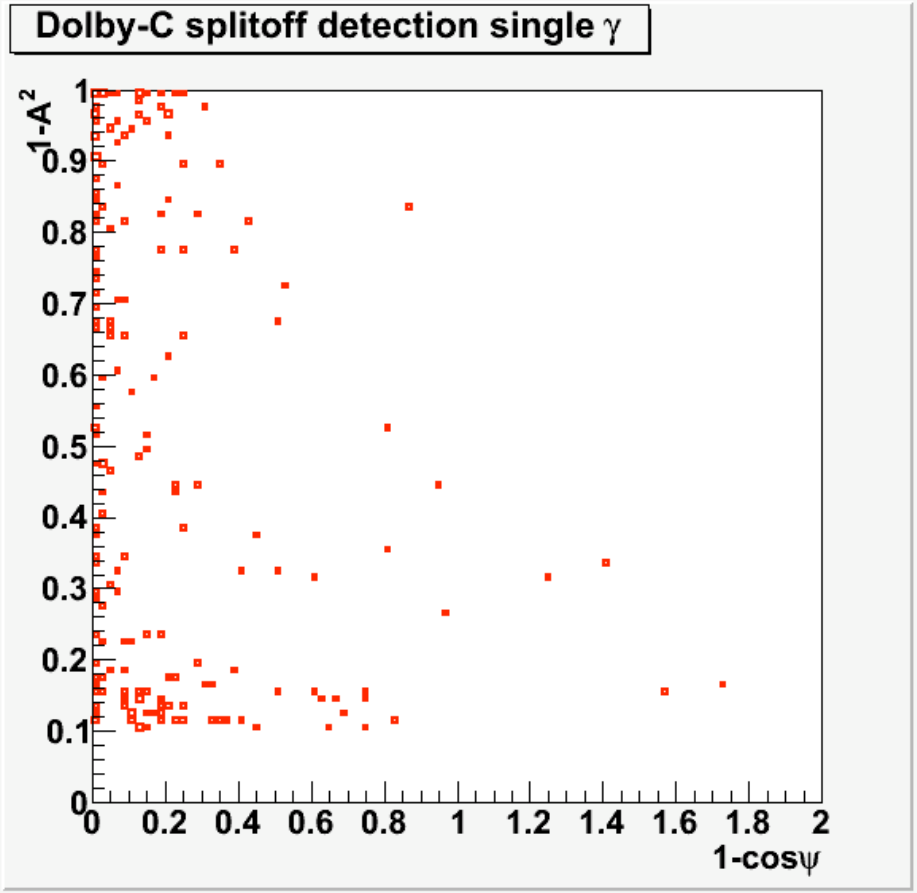
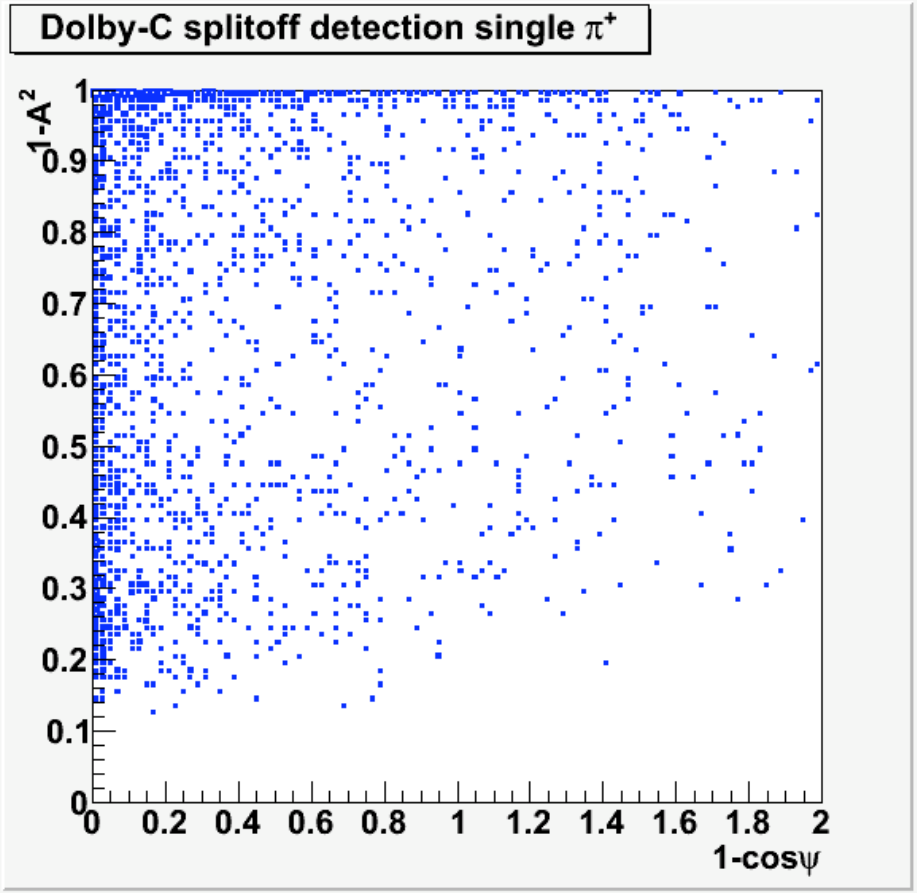


Figure 1 Plot of $1-A^2$ vs $1-\cos\Psi$ for zeroprong data. Dolby-C interprets entries in the cross-hatched area as being due to splitoffs.

Dolby-C method

- Two sets of single particle events were simulated and reconstructed in the BCAL (θ=14°-60°).
- All events should ideally have a single shower.
- Entries in the histograms below require at least 2 clusters.





Summary

- Several extra clusters are being found in BCAL
- Handles appear to be available to pare down:
  - Number of blocks/cluster
  - Connection to interior of calorimeter
- More algorithms developed at Crystal Barrel that may still be tried:
  - Kinematic Fit (a'la CBDROP)
  - "Showermass" (a'la SMART)