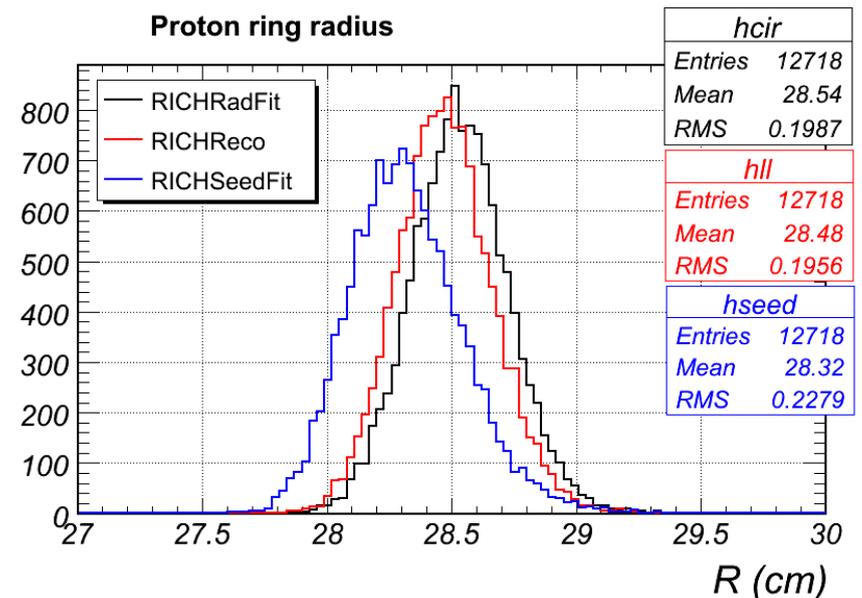
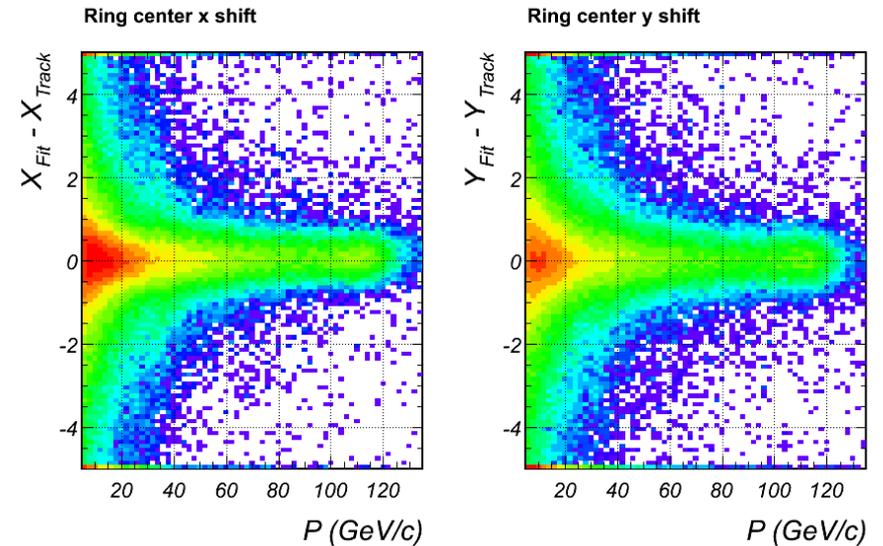


Tuning RICHSeedFit

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MIPP Software Meeting
April 19, 2007

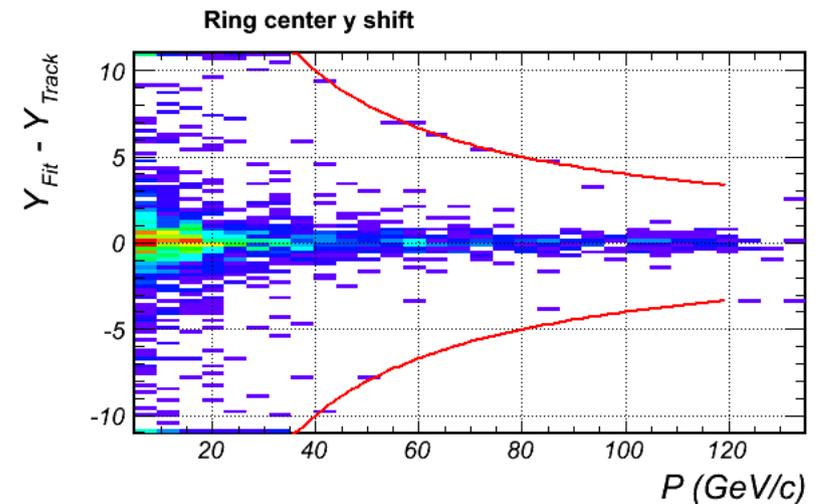
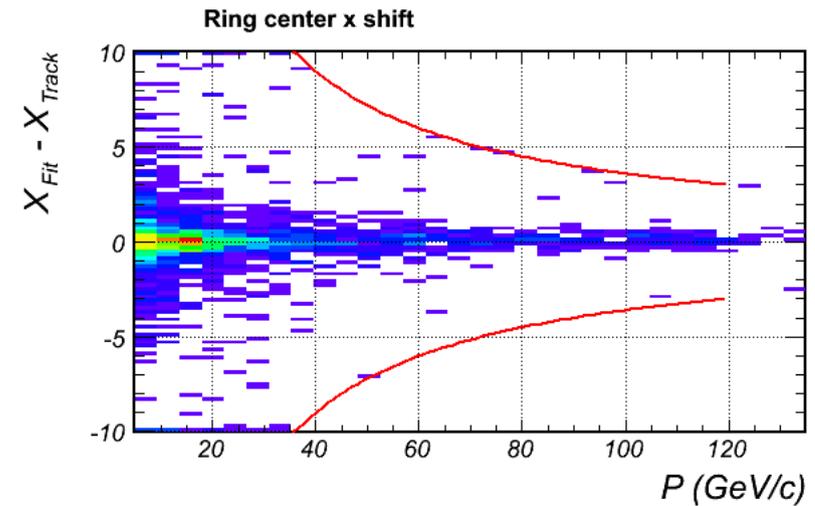
Why now?

- Fitted ring center at lower momenta walks further away from prediction than at higher momenta
- The width of SeedFit proton peak is larger than in RadFit
- Easy improvements will improve any analysis



Ring center variation

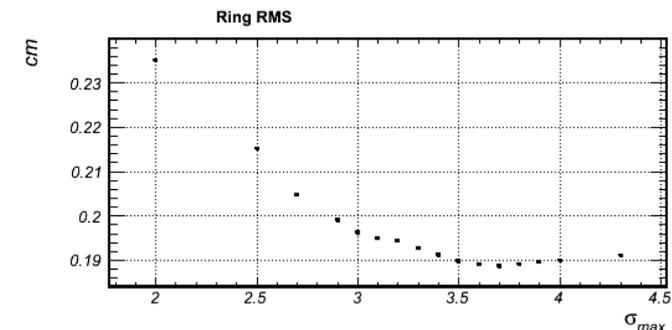
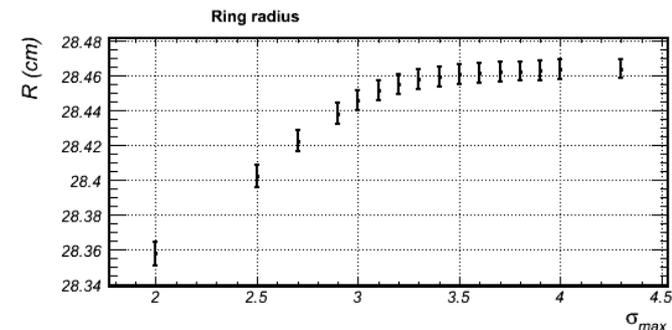
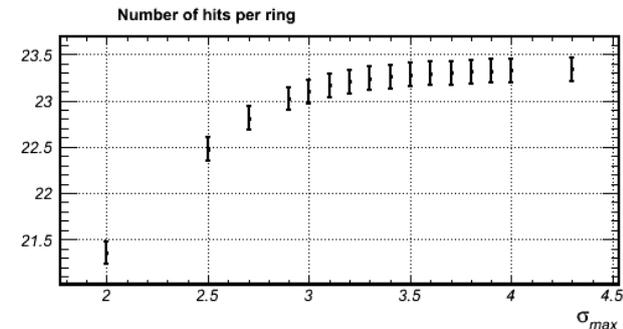
- Solution is to have momentum-dependent windows
 $dx_{\max} = C / p_{\text{tot}}$
- The width of y distribution is $\sim 10\%$ larger
- Limit maximum window to 10 cm in x , 11 cm in y



Reducing ring width

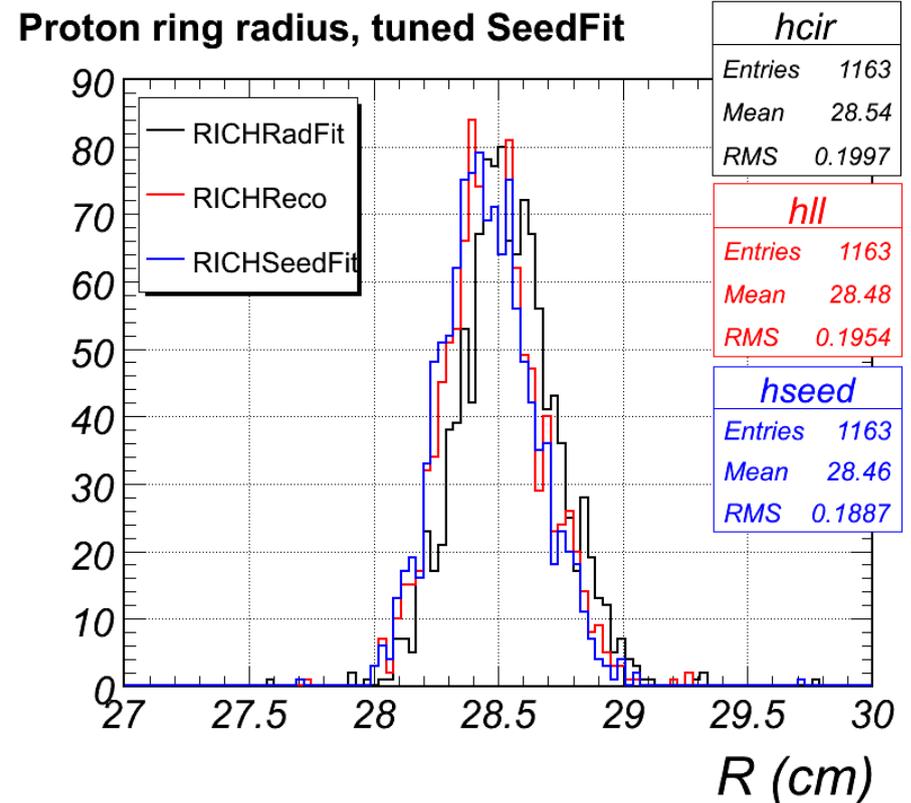
Use subrun 15860.0

- Primary source of large width is small DAF critical radius (σ_{\max} was 2)
- The critical radius needs to be small to exclude noise, but large enough to include all info
 - 3.7 seems like a good choice



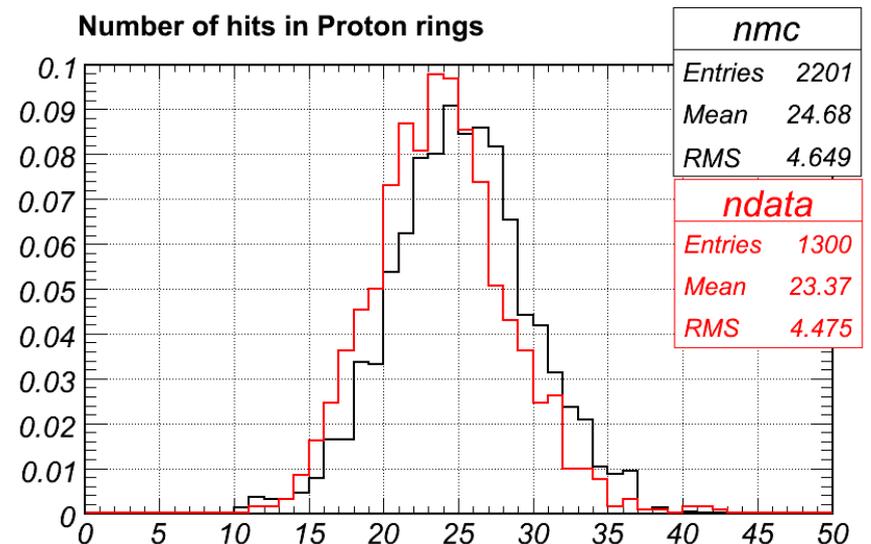
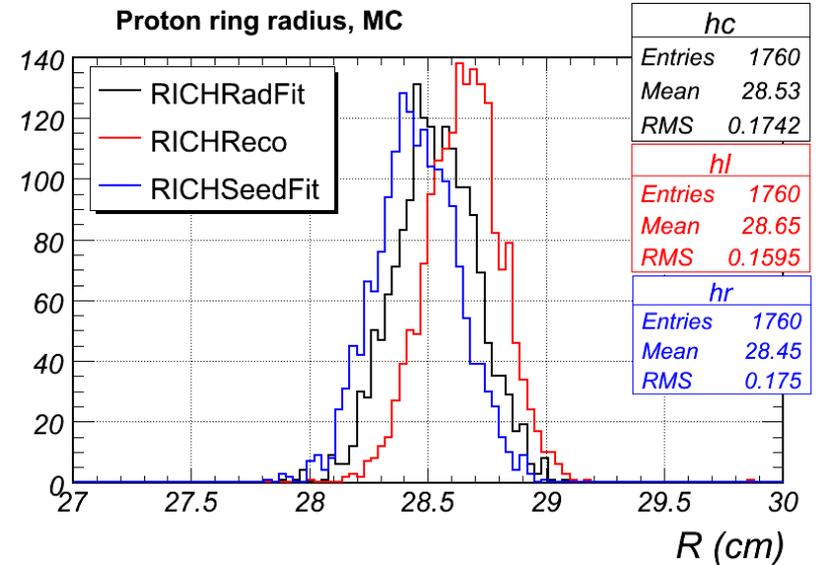
Comparing to RadFit

- With larger σ_{\max} the algorithm is not punished for including PMT's with larger distance to ring center
- Results from one subrun look slightly better than RadFit



How similar is MC?

- Proton ring fits in Monte Carlo are somewhat different
 - Noteably RICHReco is much cleaner and substantially different from Circ/Seed fits
- Number of hits is off by less than 5%



Summary

- RICHSeedFit is better tuned now
- Allowing for momentum dependent x,y window should help to distinguish noise/pileup, etc at lower momenta
- Proton ring width is reduced by about 20% by increasing the DAF critical radius
 - For a 29 cm ring radius, the signal region is ± 2.6 cm, up from ± 1.5 cm