Software Update

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Remaining Issues

Status : 1st version code is in the CVS.

- basic functions work well.
  - CNTtrack – VTX hit association
  - DCA calculation
- There are still remaining issues listed below.

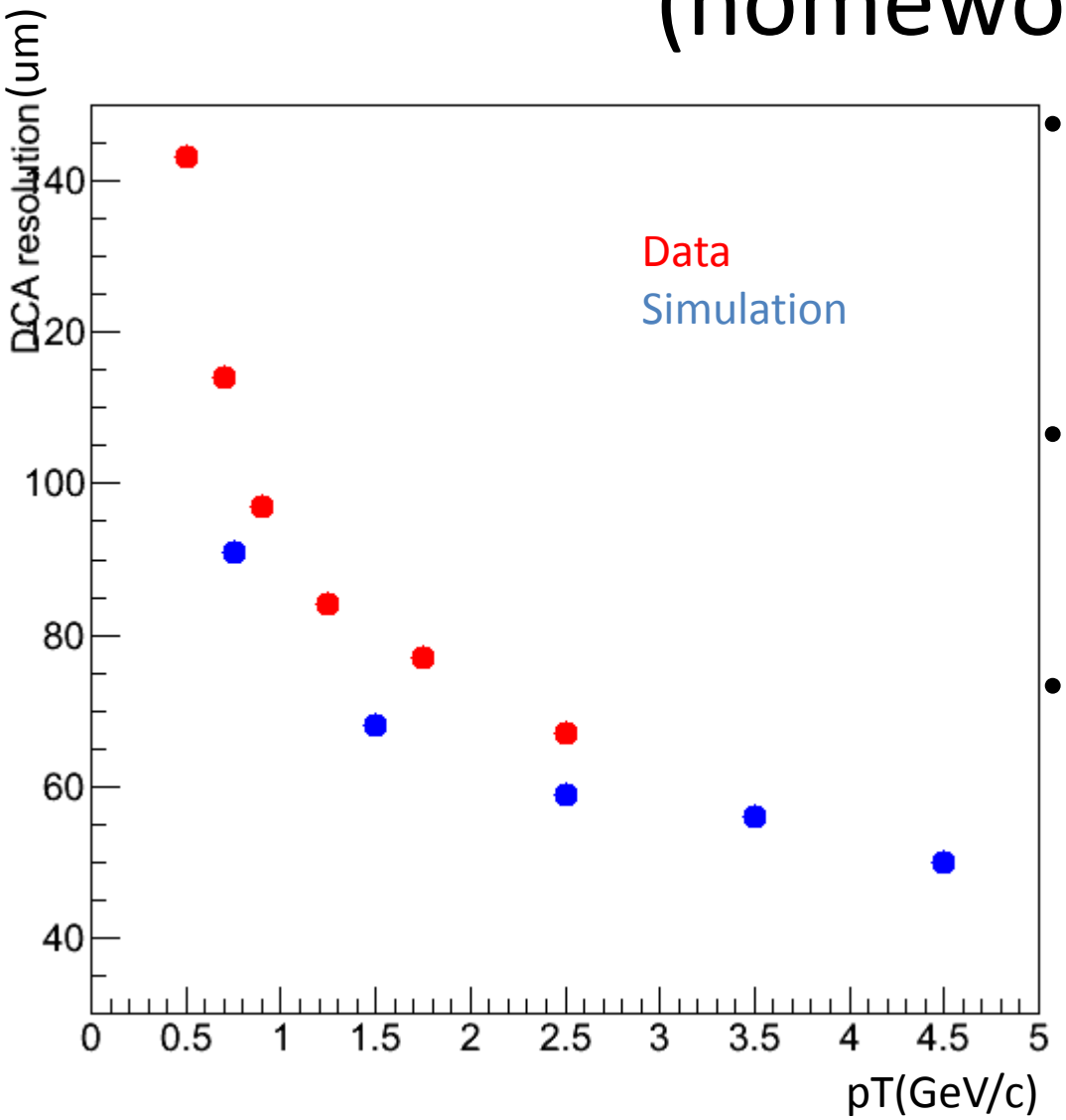
Issue	Status	Expected time to finish
Memory leaks	One big leak is fixed at last week. But another big leaks still remain.	1week 2days
Improve Chi2 calculation	Using real data, currently working on this issue.	2 or 3 days 2days
Improve DCA calculation	Second (or more) hits are used for the DCA calculation. Not start yet	2 or 3 days
Parameter tuning	Used for speed-up. Not start yet	2 or 3 days
Speed up	Apply tigher cut (now too much wider).	1week
Efficiency Study using simulation	Correlated with parameter tuning.	1week
Event Display for Run 12	Prepare for run 12	Ready (1day)

Memory Leak Issue

- Memory leak in SvxCentralTrackReco
  - 1st Leak is fixed (last week)
  - 2nd leak is fixed (this week)
  - 3rd leak is about to be fixed.
    - From stl vector in DST node. TClonesArray can not handle vector completely. I will use a fixed length array instead of vector.

- There are still a lot of leaks in the svxDetectorGeo, SvxReco, SvxStripixel, SvxStandaloneReco,

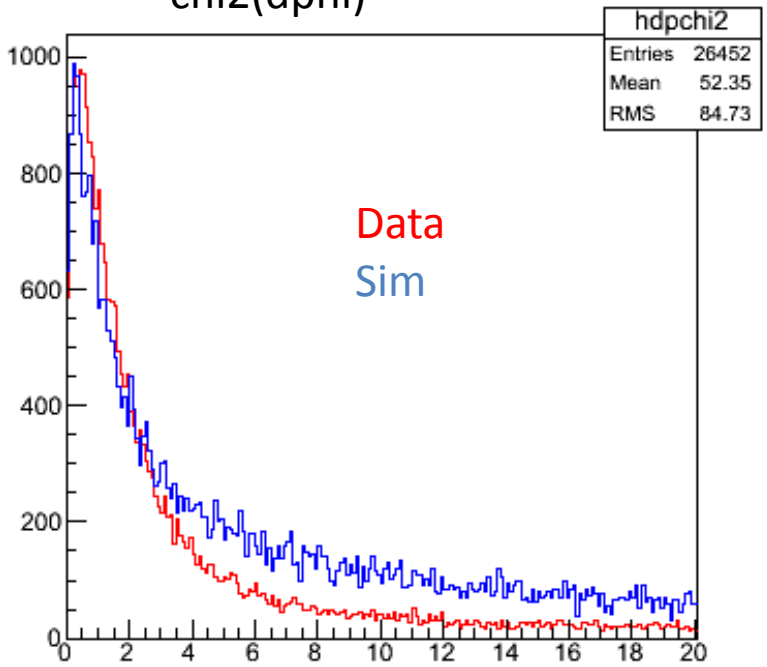
pT dependence of DCA resolution (homework)

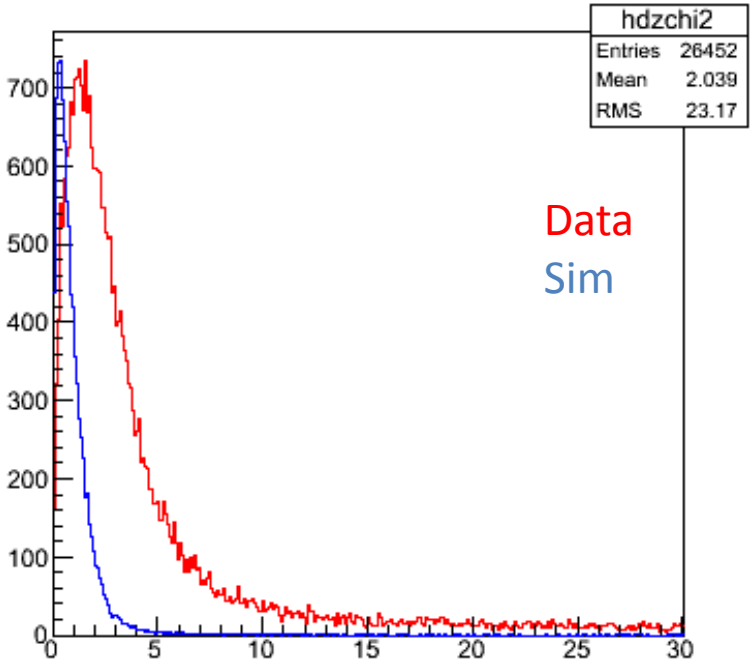


- DCA resolution between data and simulation is compared.
  - DCA resolution = gaussian sigma
- Simulation : Alan's Talk at Review 2009. (values are taken by eye from his slide)
- pT dependence looks similar, but the resolution in the data is slightly worse.

Chi2 distribution

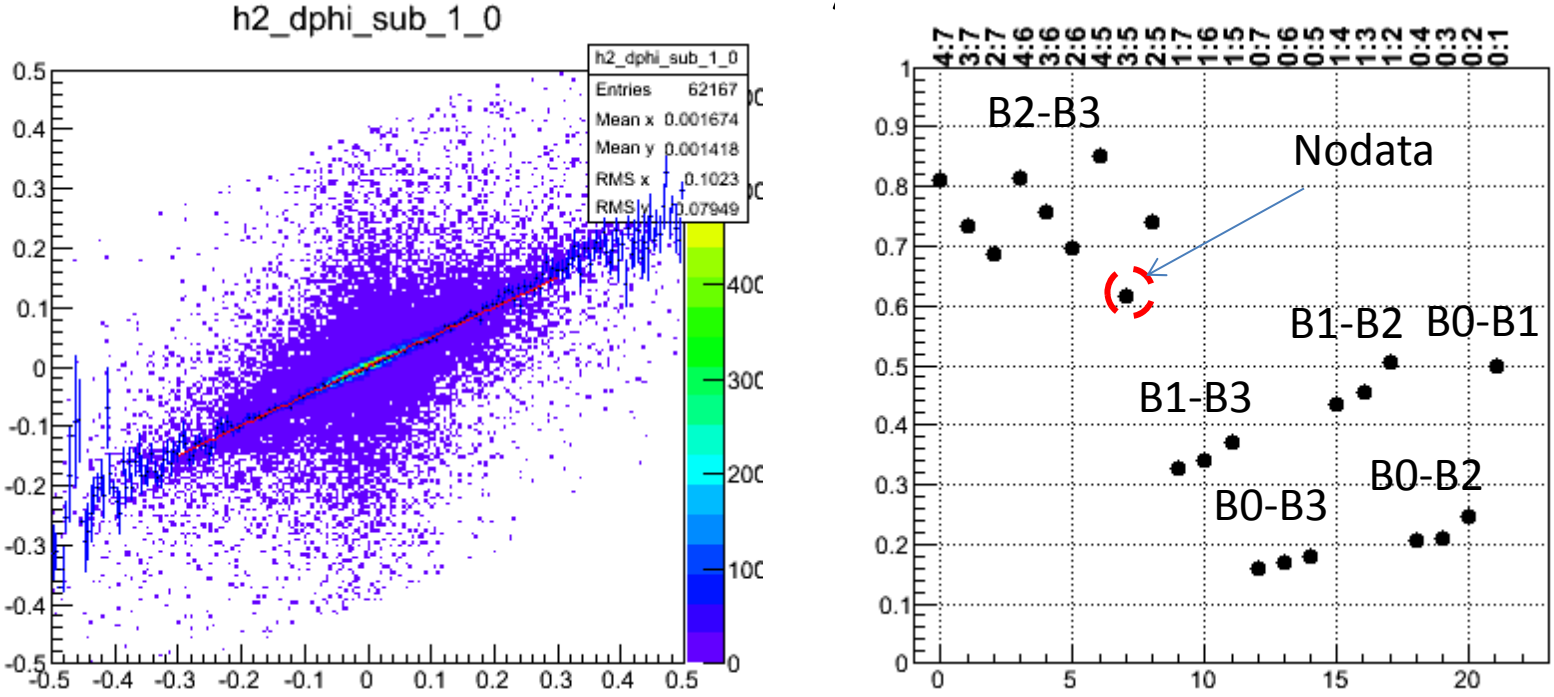
chi2(dphi)





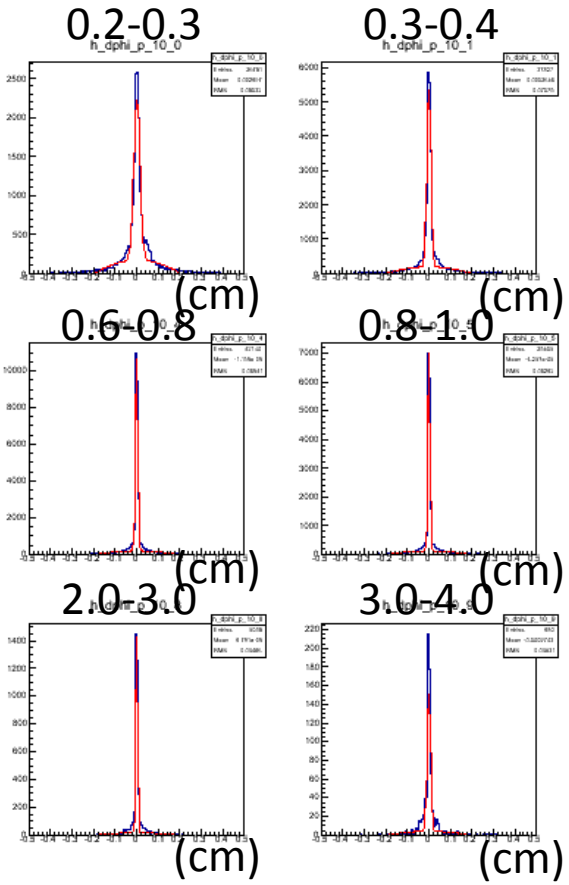
- Chi2(dphi, dz) in data and simulation are compared:
  - Data : Run 349679 10k events
  - Simulation: Single pi+/pi-, Sigma_Vtx(x,y) = 1mm, z=5cm
- Sigma in chi2 calculation which obtained by data is used for both data and simulation.
- Chi2 (dphi) Looks similar, but chi2(dz) in simulation is smaller than that in data. This imply that the alignment in dz is needed.

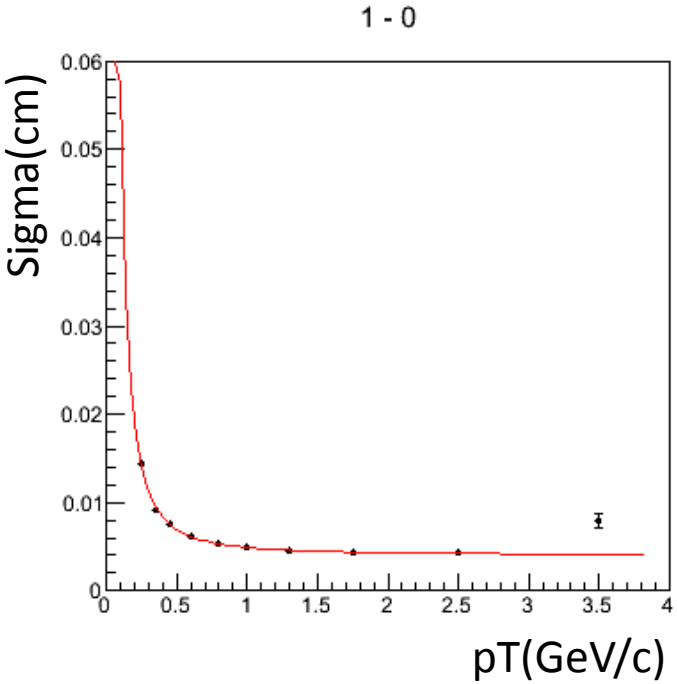
Check the correlation of dphi slope sublayer by sublayer



- Correlation btw layers → btw sublayers
  - B3, B2… 6 types → B3(7),B3(6), … 22 types

pT dependence of sigma



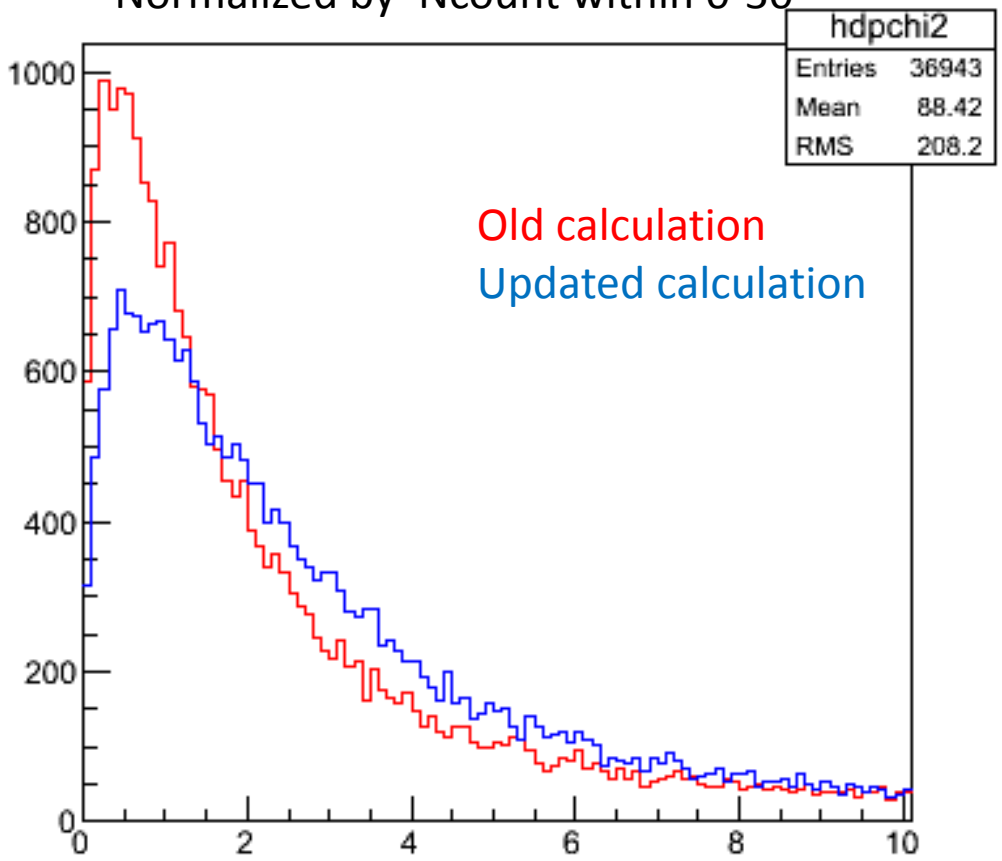


- Residual distritubion is Fit by gaussian
- Sigma vs pT is fit by
  - f(p) = a + b/p^c

- Currently dphi is considered.
  - for a while, dphi is well aligned.

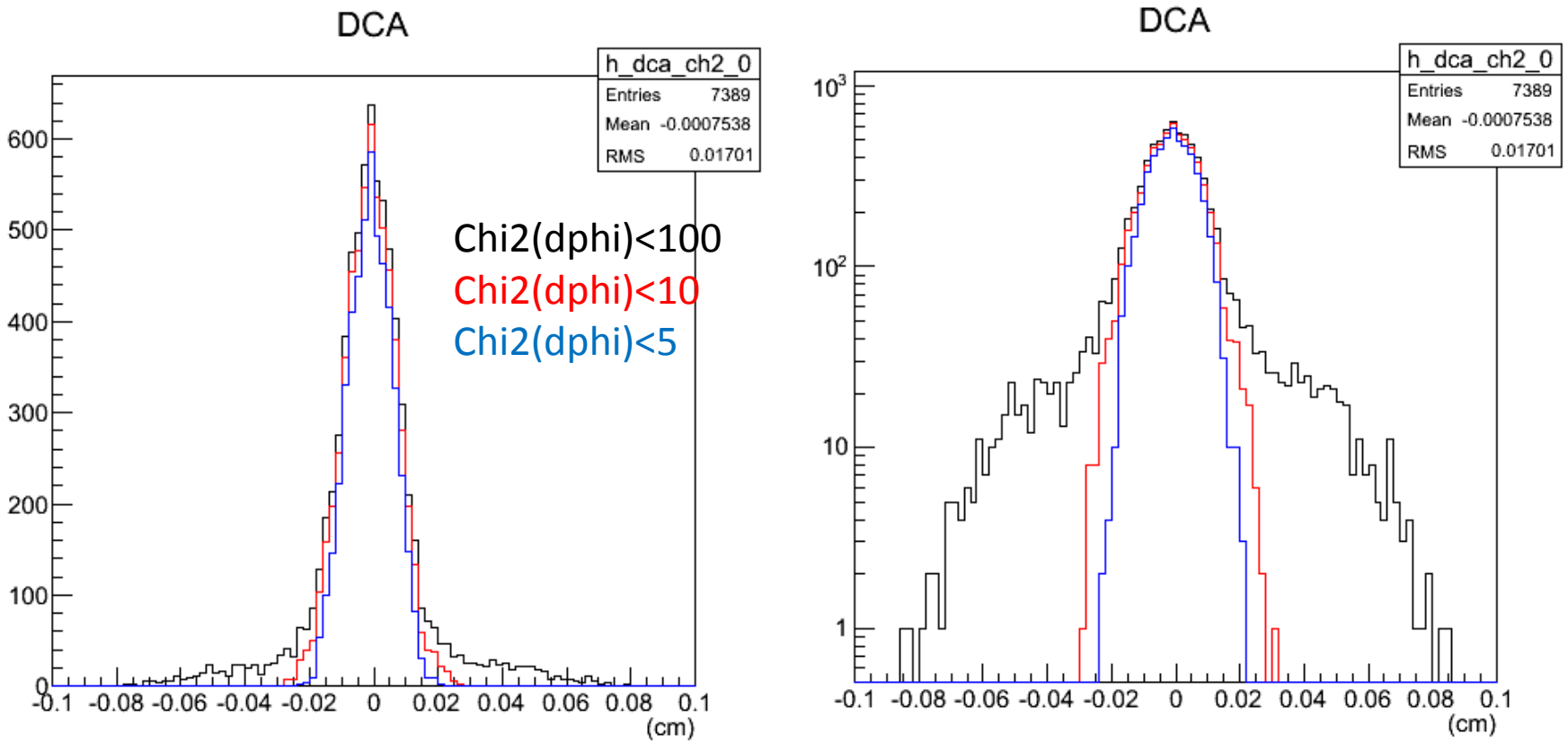
Chi 2 distribution is updated

Normalized by Ncount within 0-30



- Chi2 (dphi) is improved.
- Chi2(dz) is not studied yet in detail.

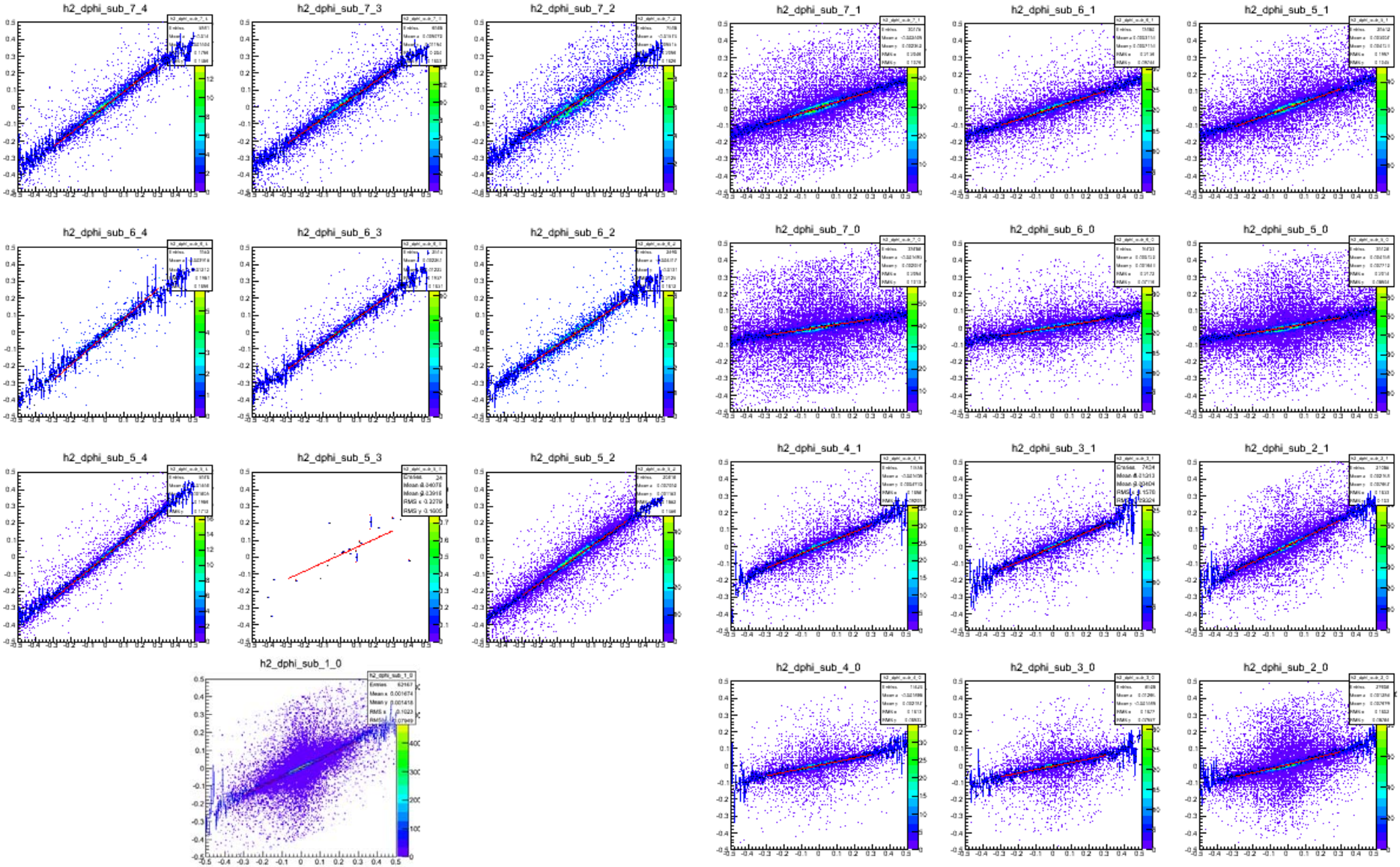
DCA distribution with chi2(dphi) cut



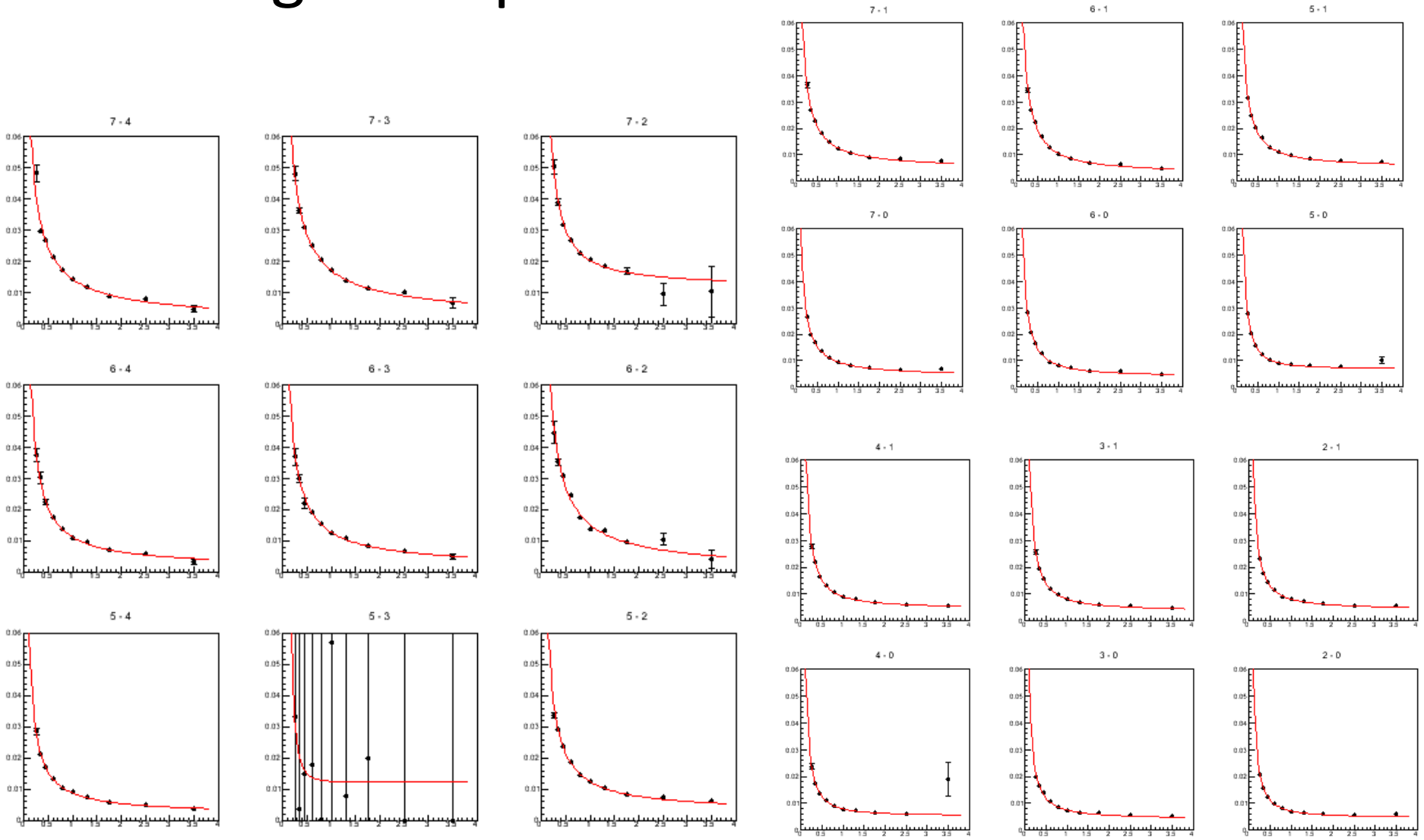
- Selection:
  - |dphi3|<0.5, |dz3|<0.5, chi2 (dphi) cut, pT>1GeV/c
- The tail reduces significantly with tighter chi2(dphi) cut

Back up

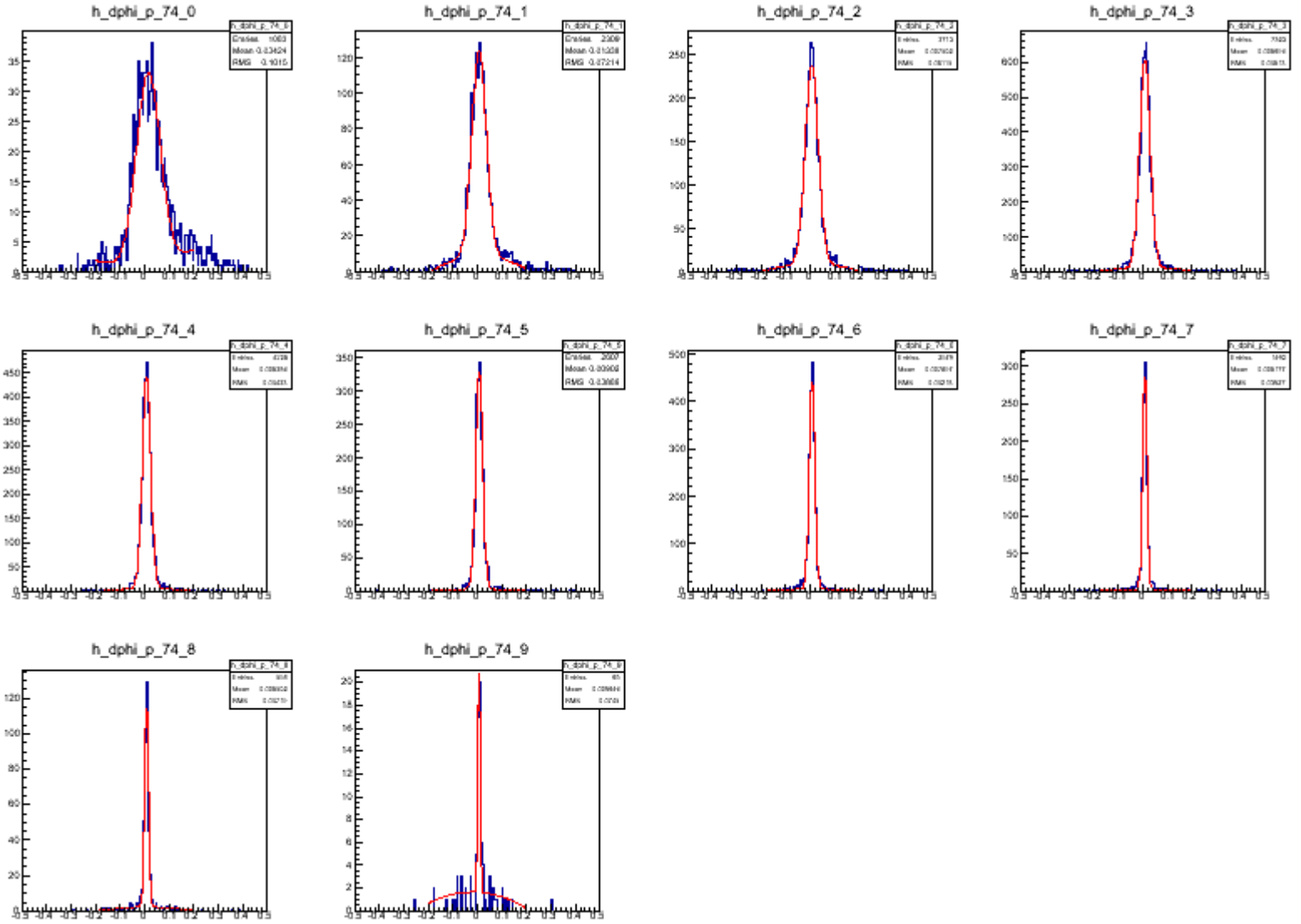
dphi_n vs dphi_m



Sigma vs pT for each combination



B2(4)-B3(7)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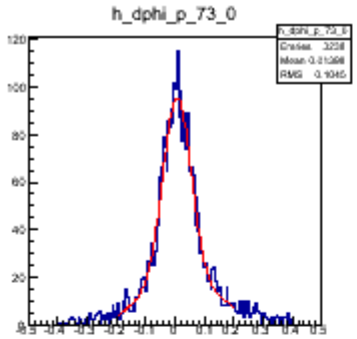
h_dphi_p_74_9

B2(3)-B3(7)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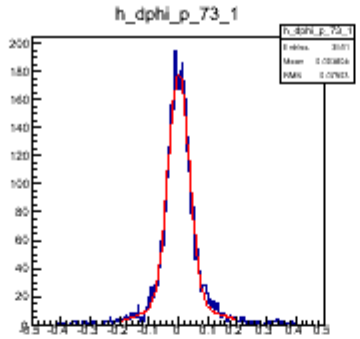
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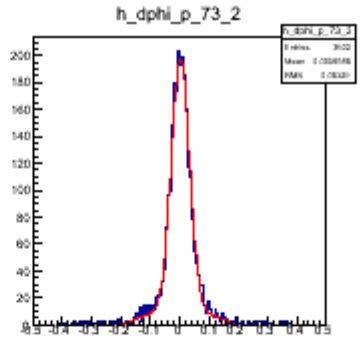
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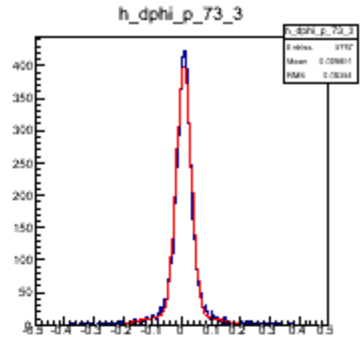
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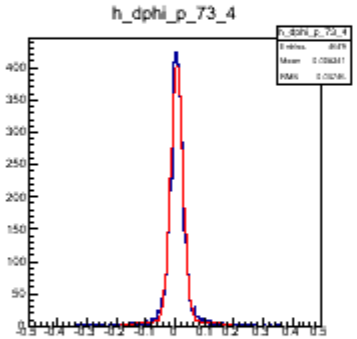
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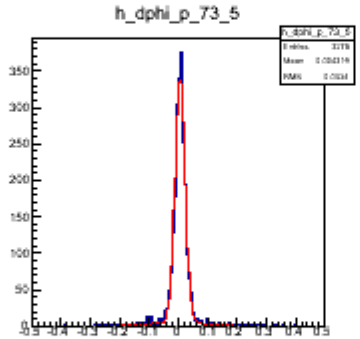
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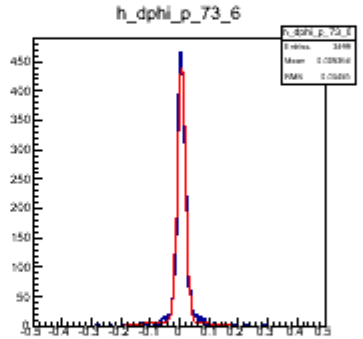
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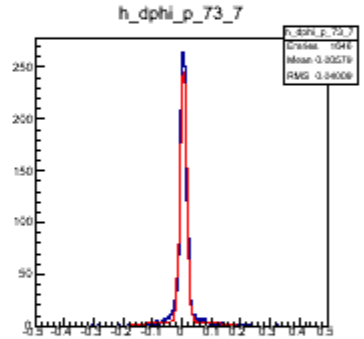
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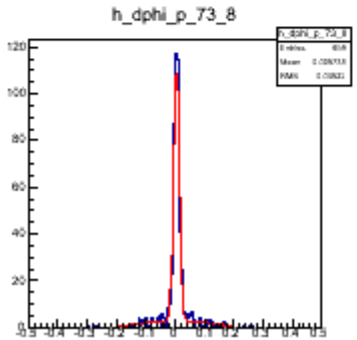
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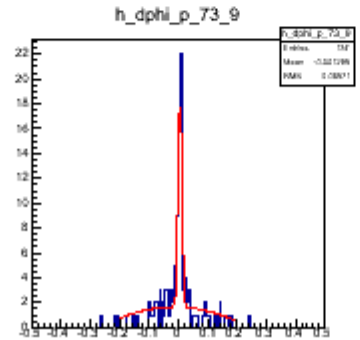
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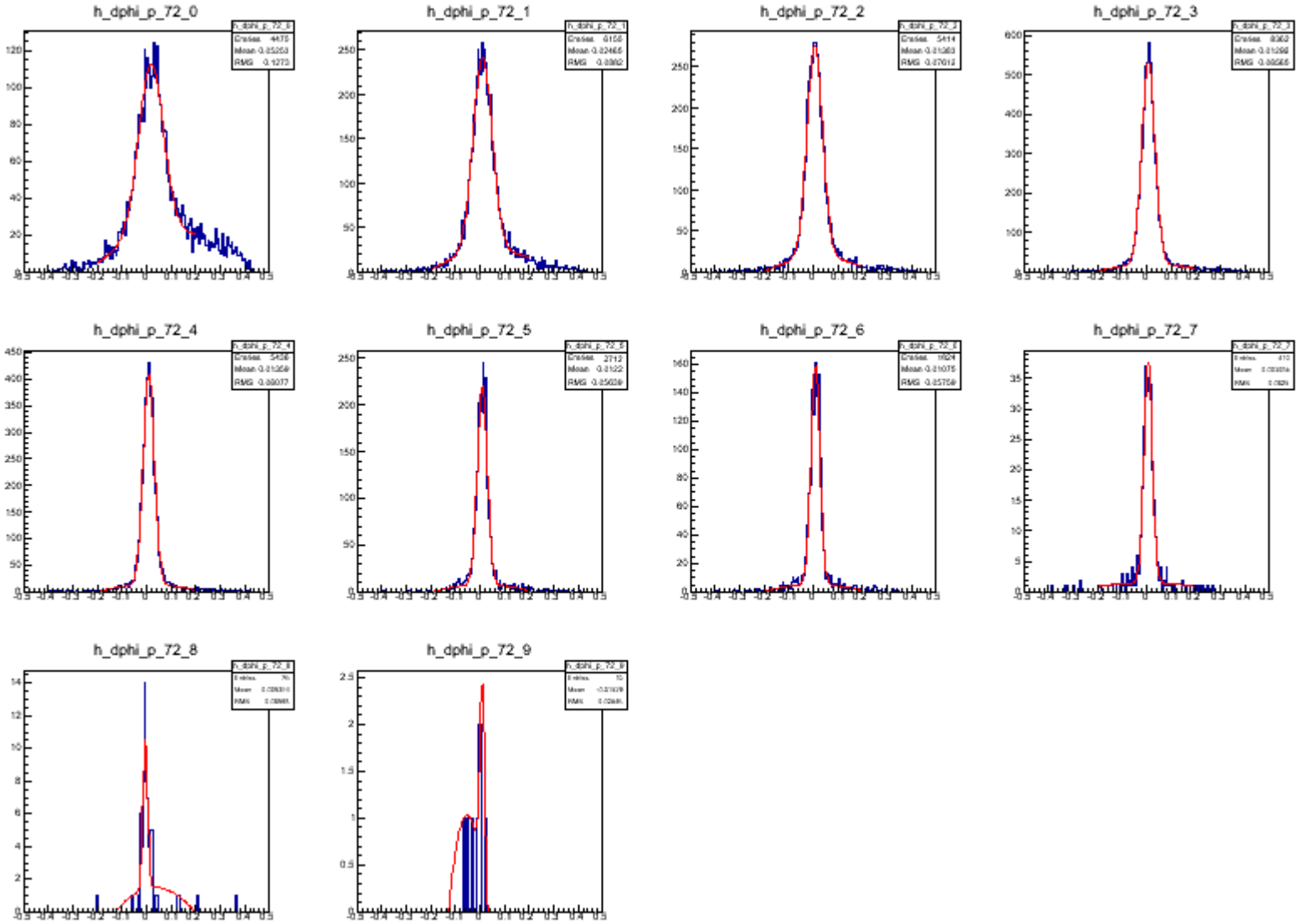
B2(2)-B3(7)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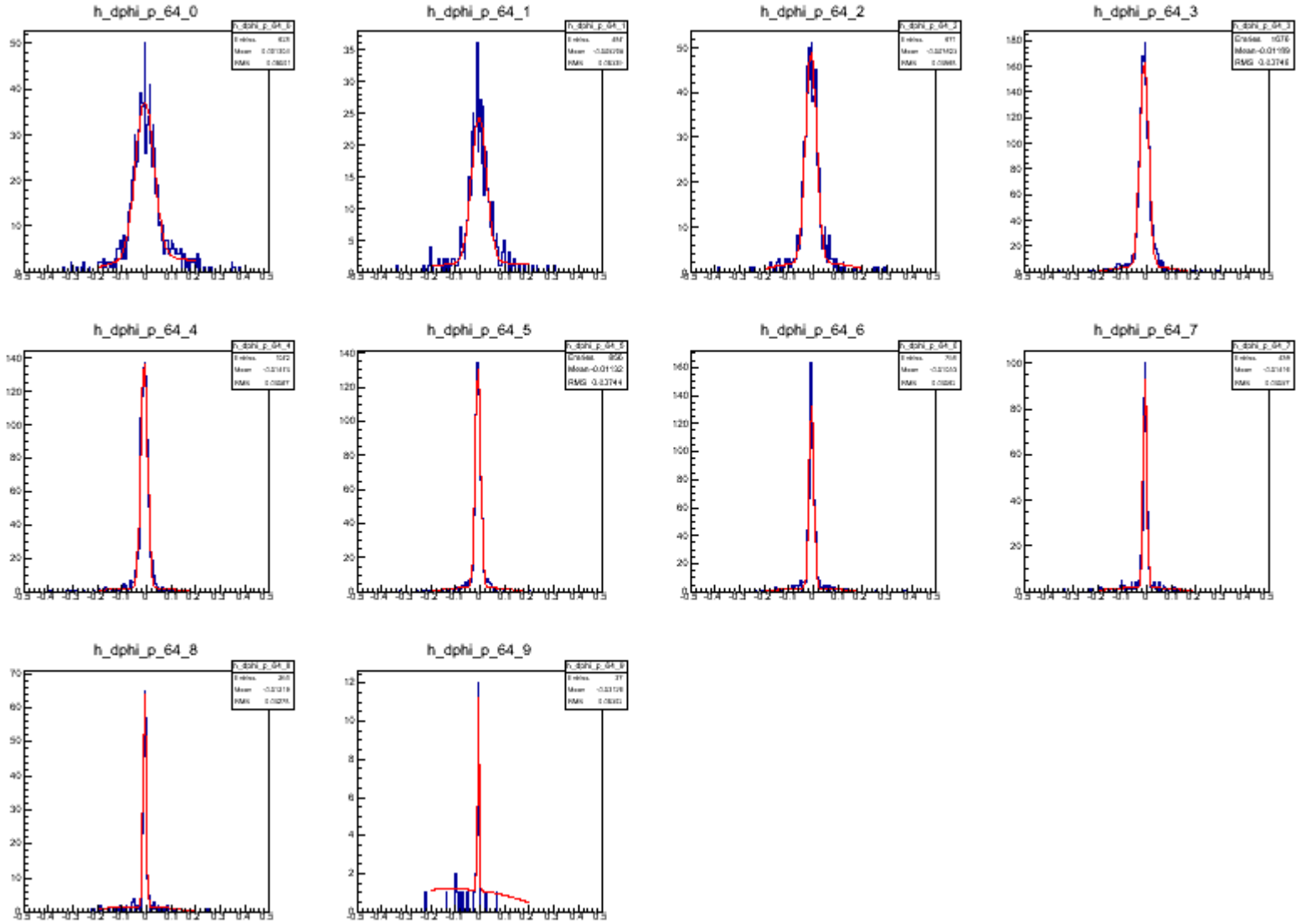
B2(4)-B3(6)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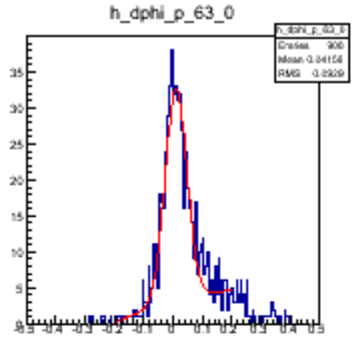
B2(3)-B3(6)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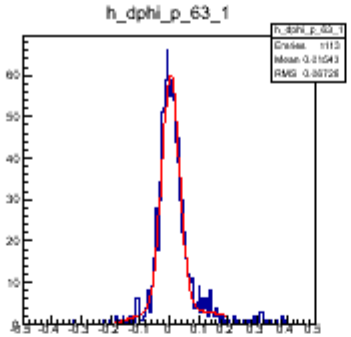
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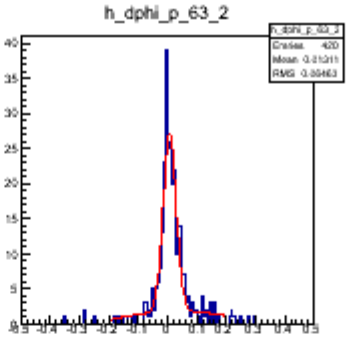
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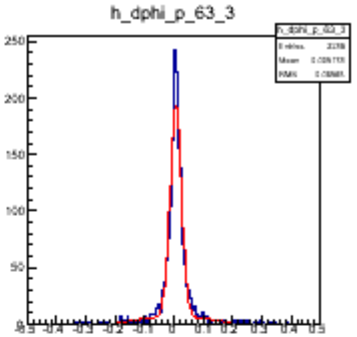
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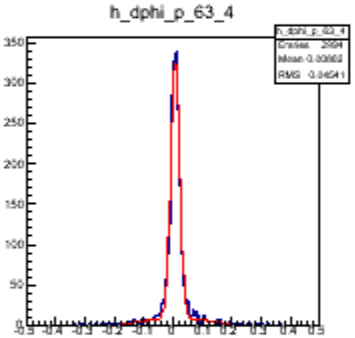
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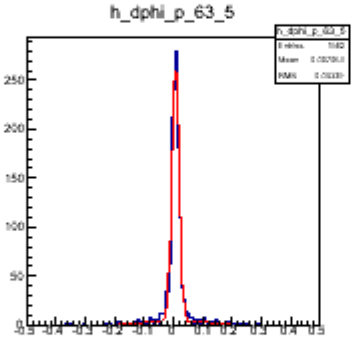
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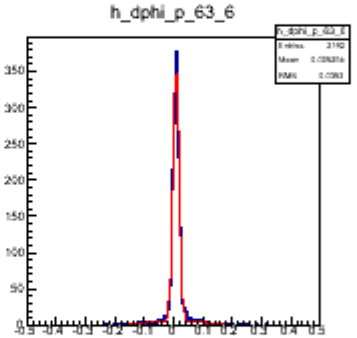
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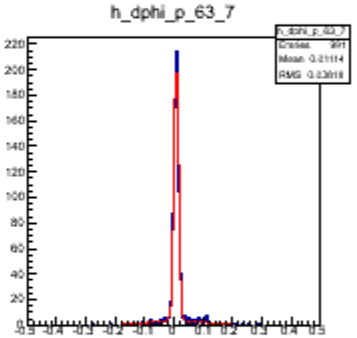
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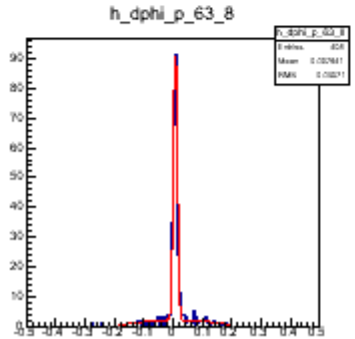
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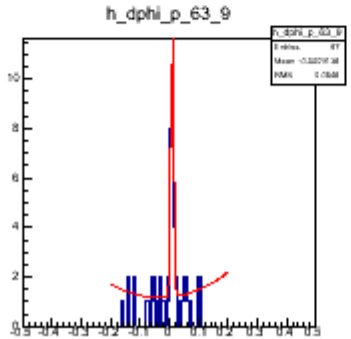
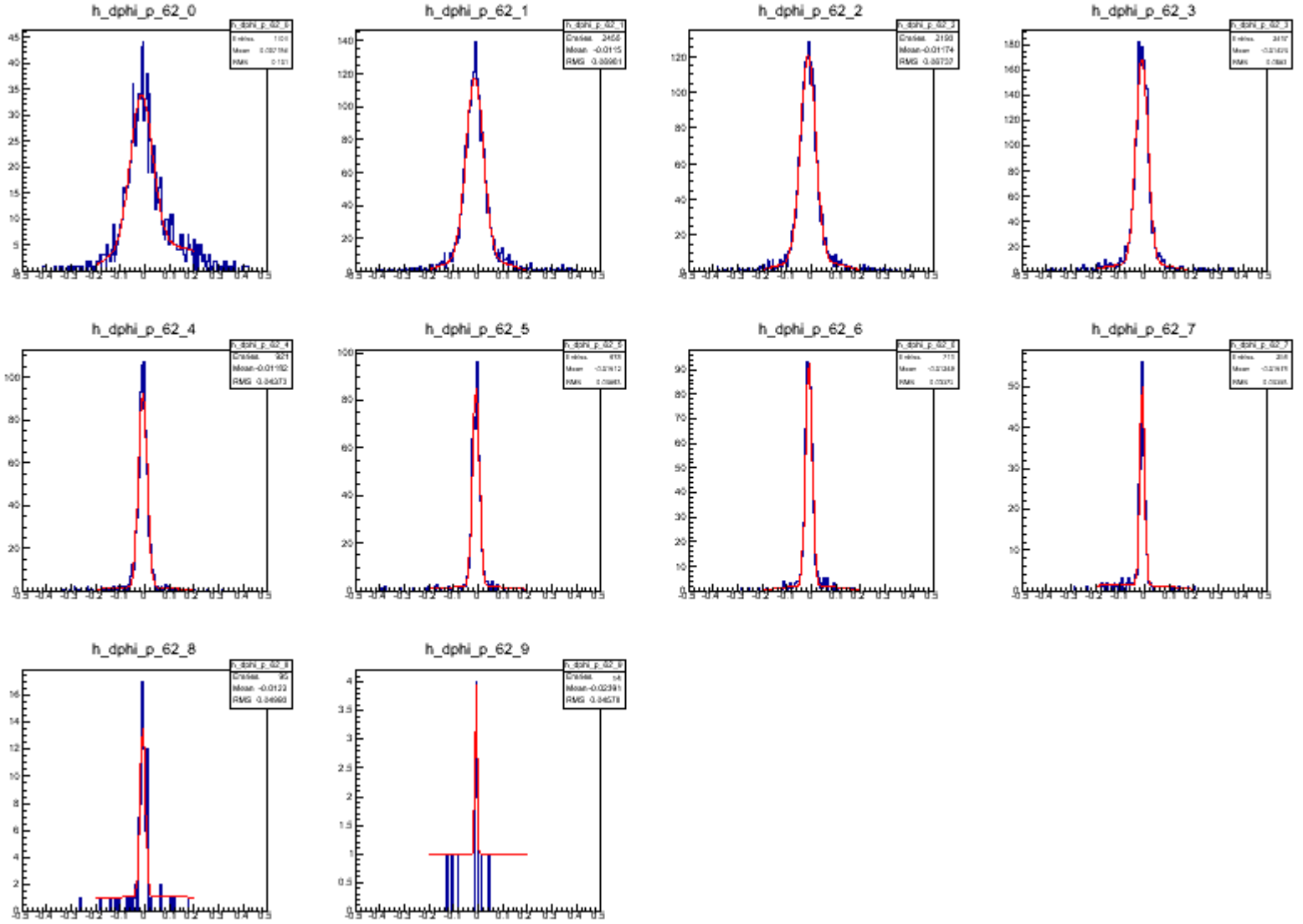

h_dphi_p_63_9

B2(2)-B3(6)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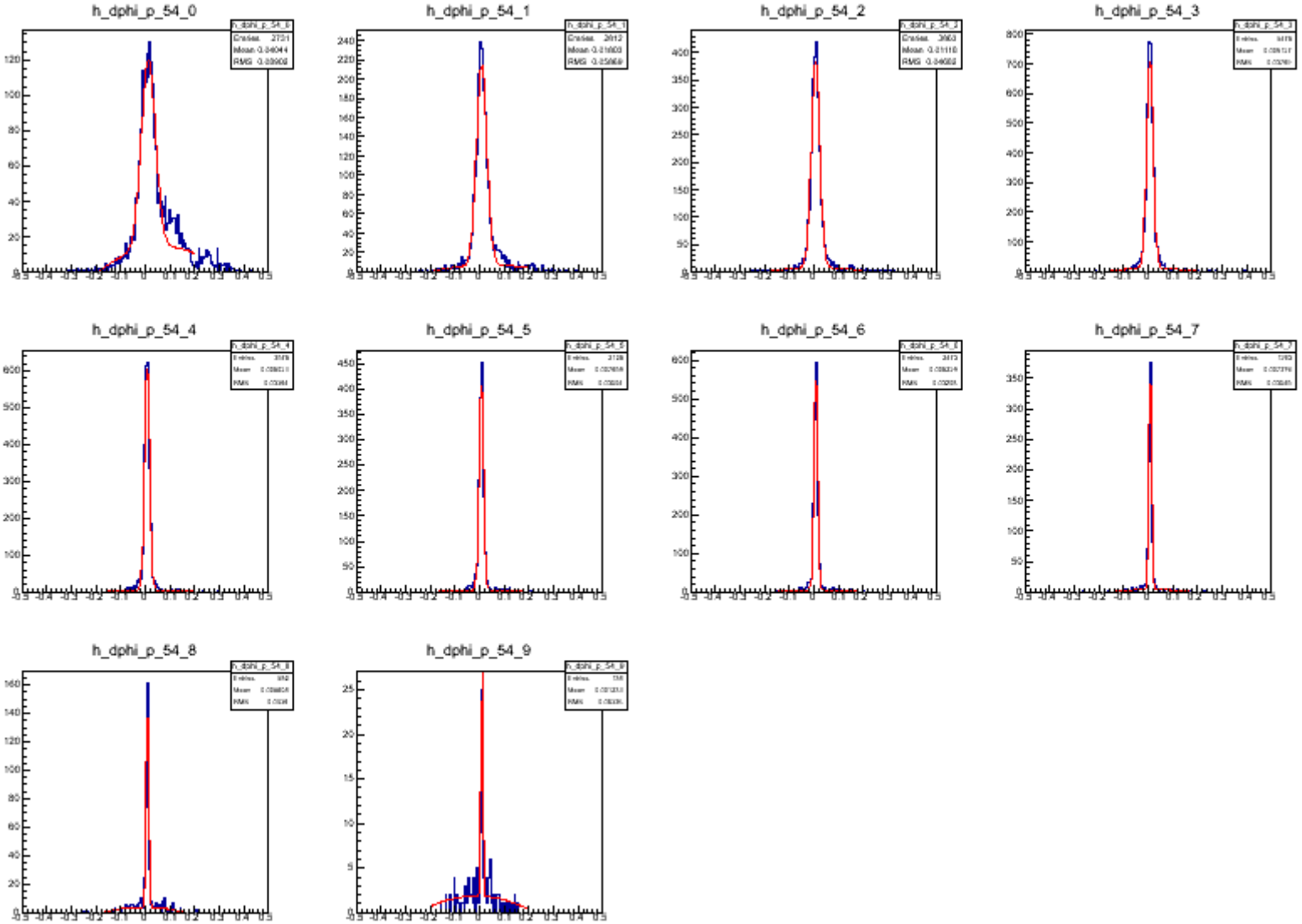
B2(4)-B3(5)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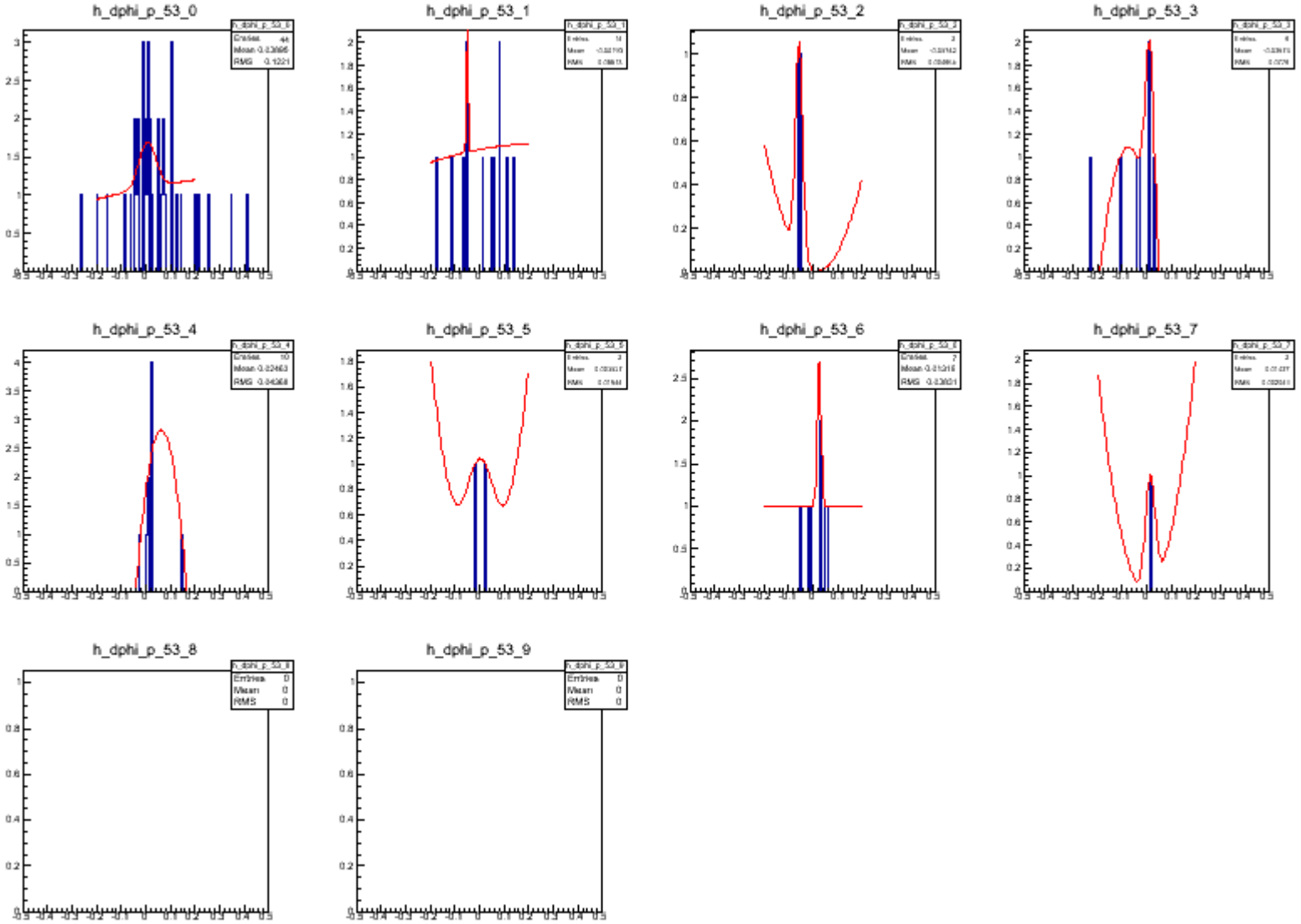
B2(3)-B3(5)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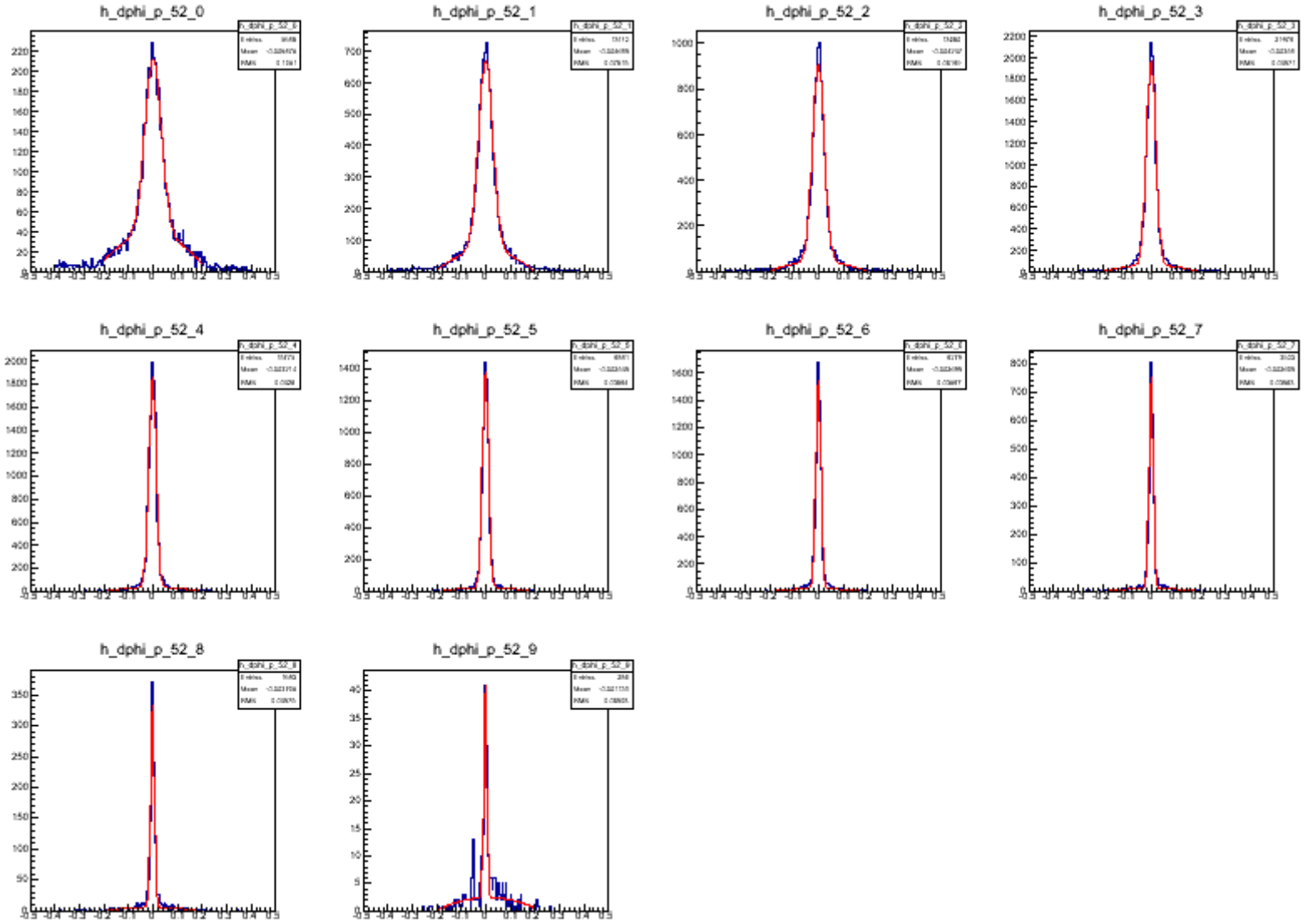
B2(2)-B3(5)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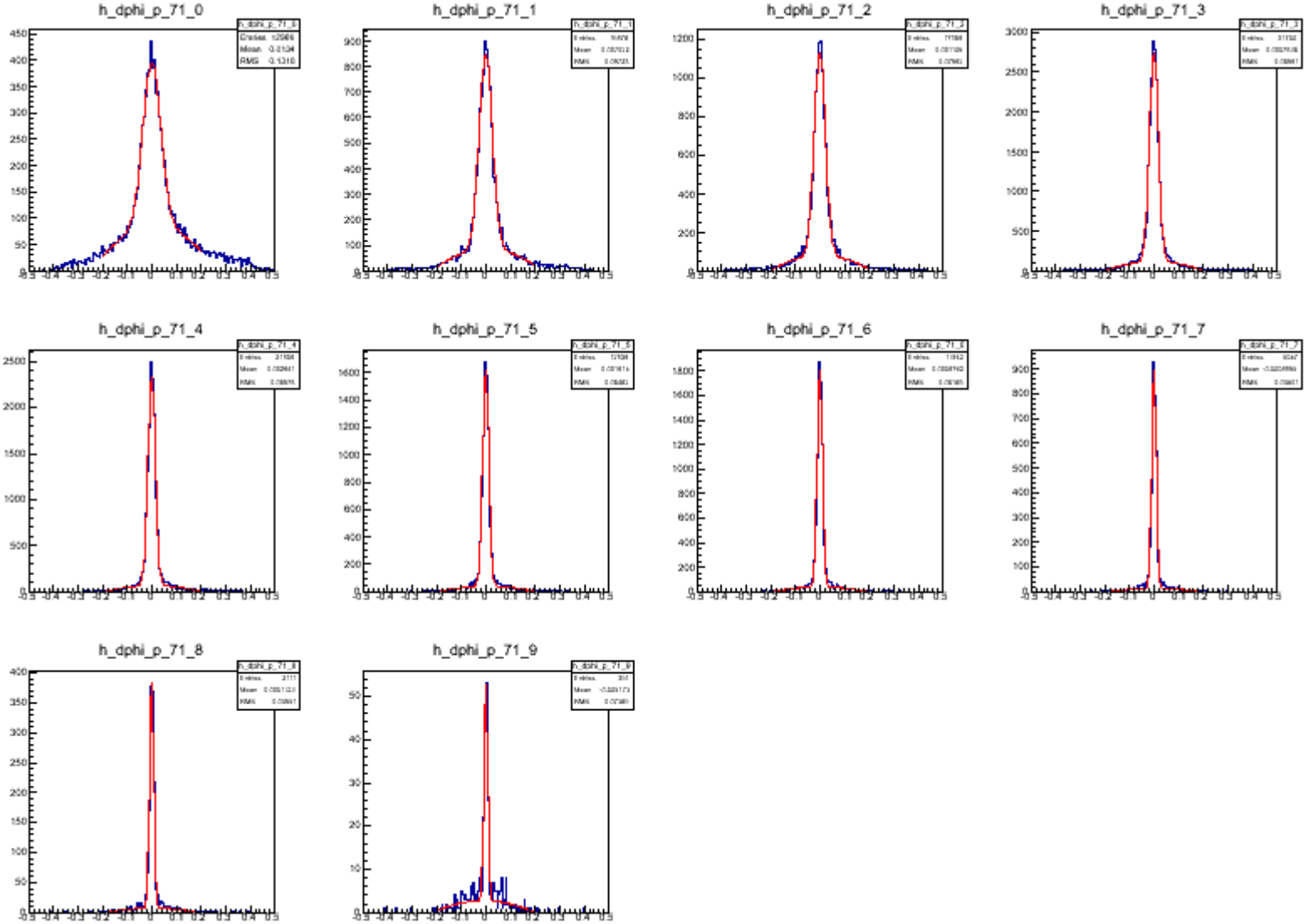
B1-B3(7)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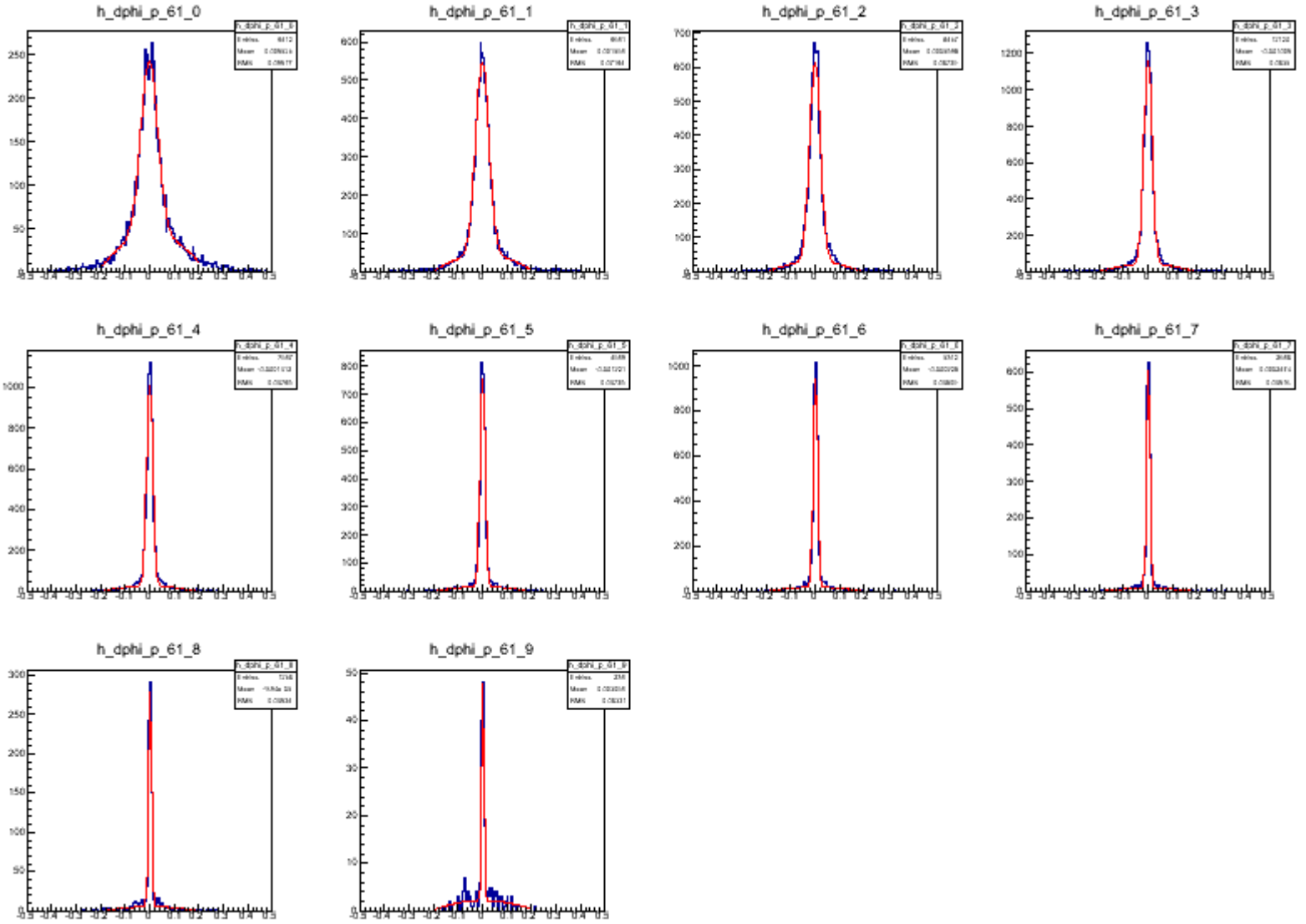
B1-B3(6)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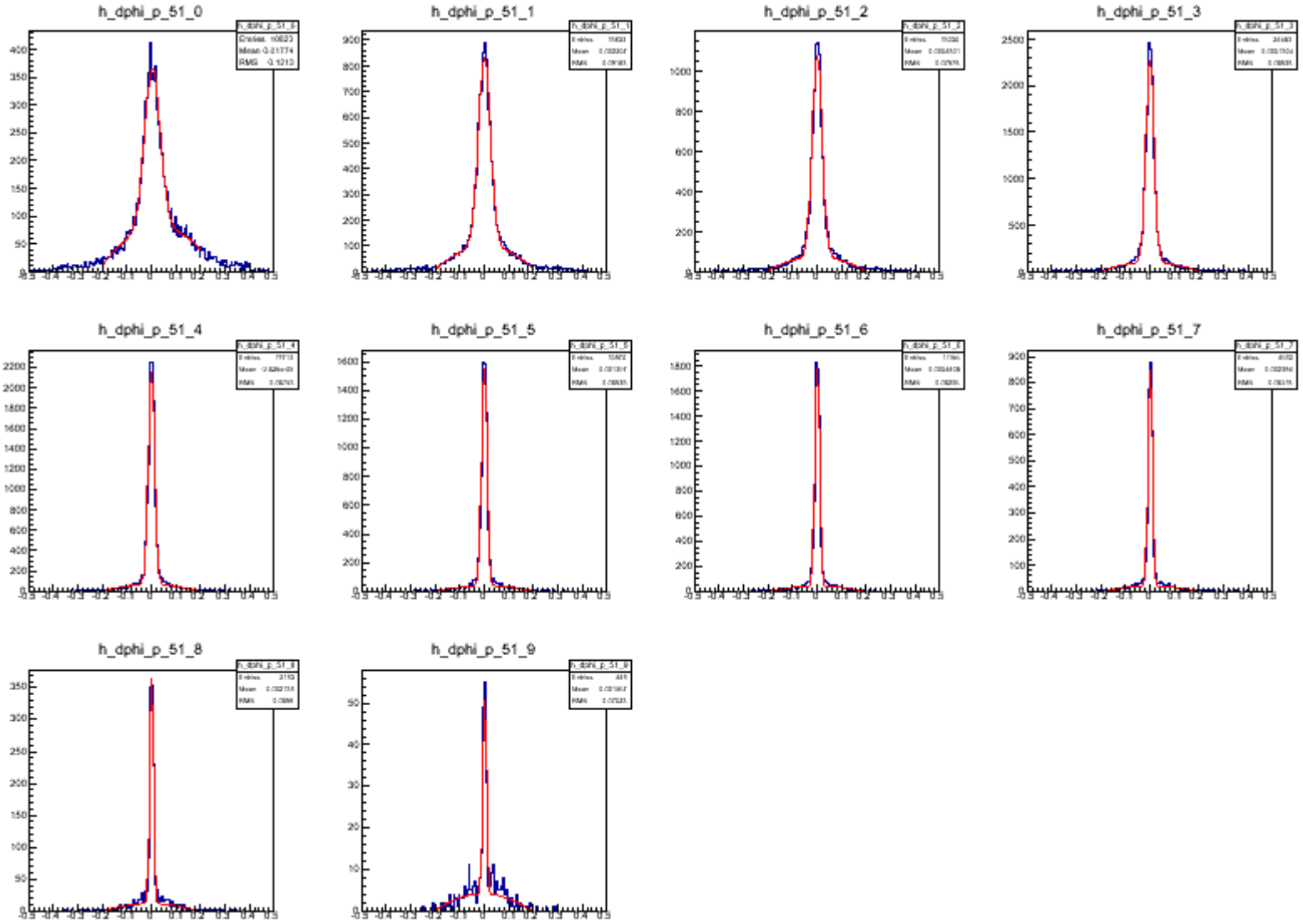
B1-B3(5)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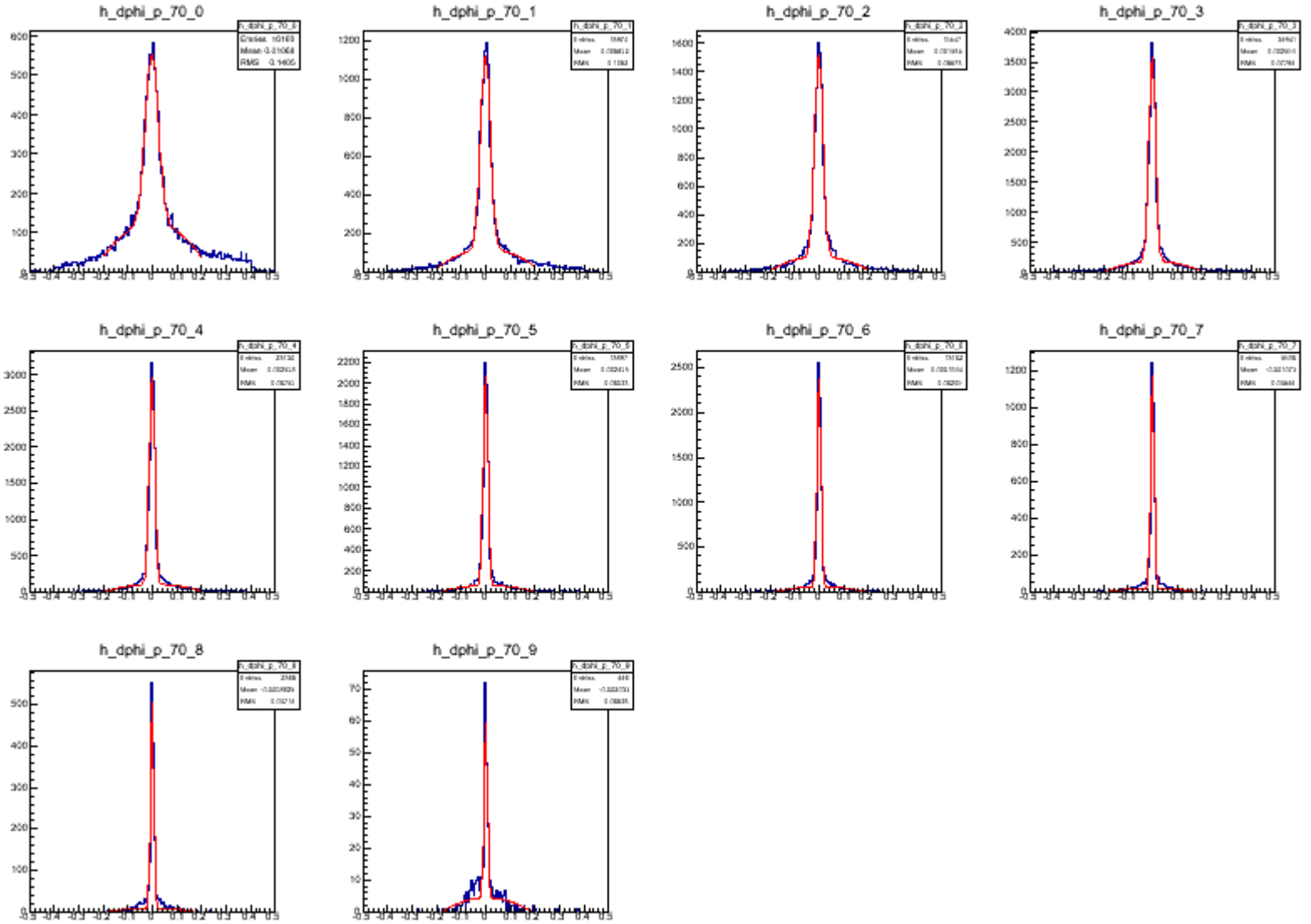
B0-B3(7)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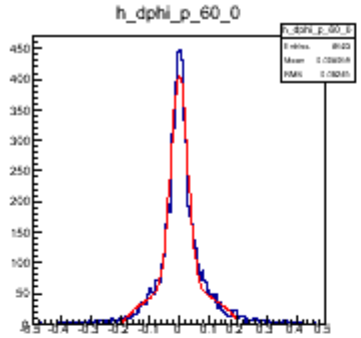
B0-B3(6)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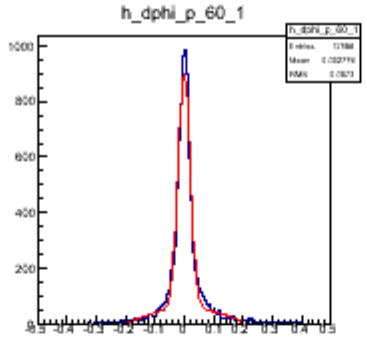
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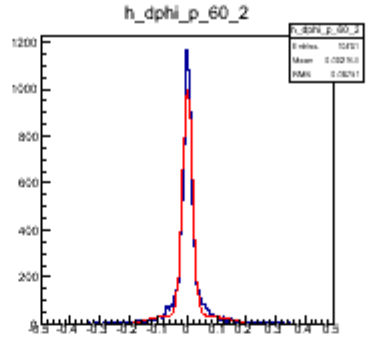
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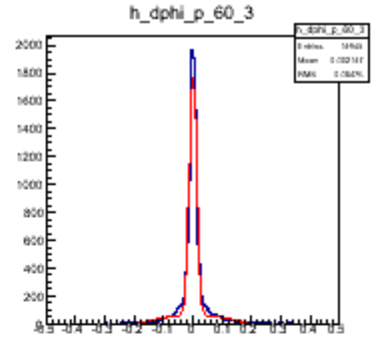
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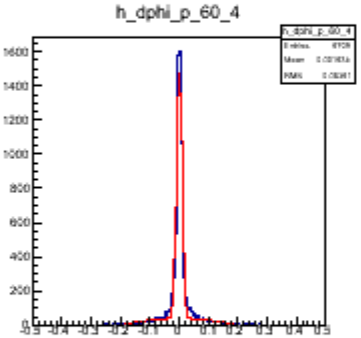
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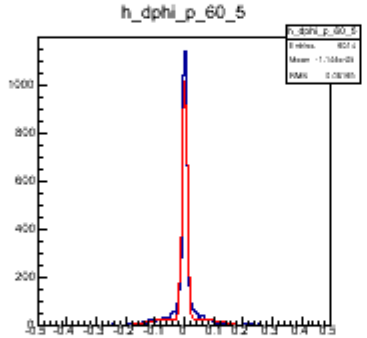
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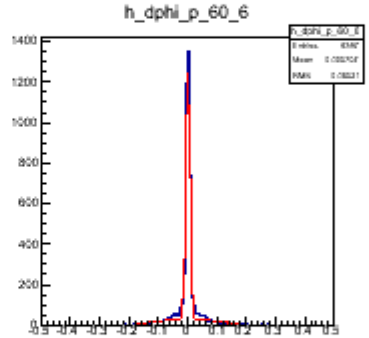
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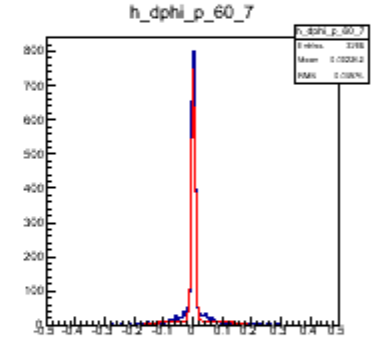
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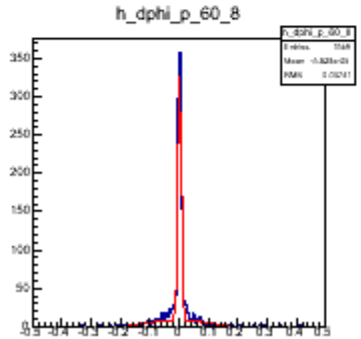
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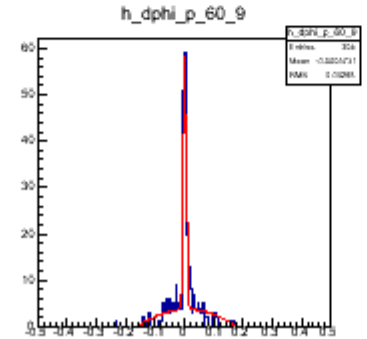
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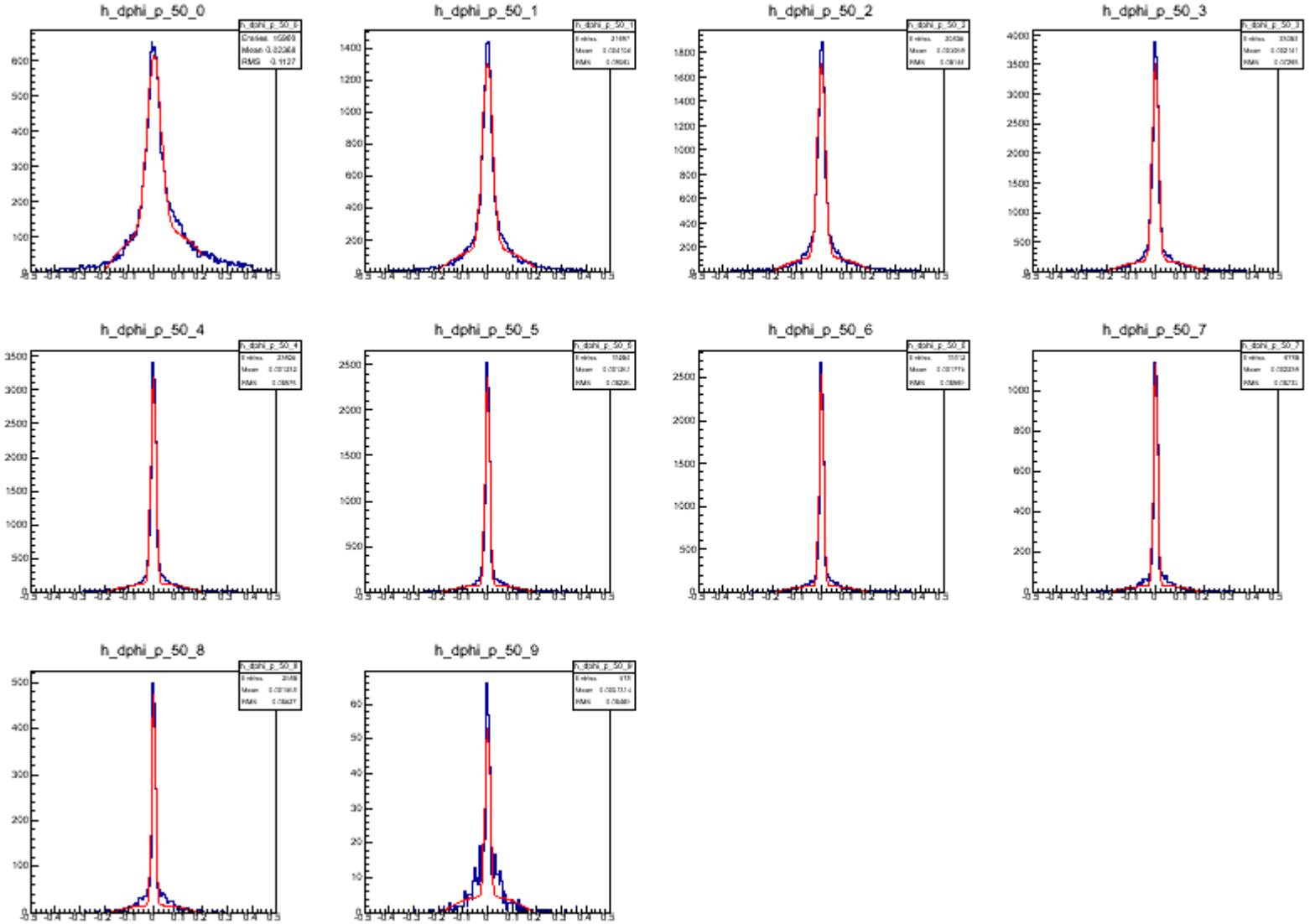
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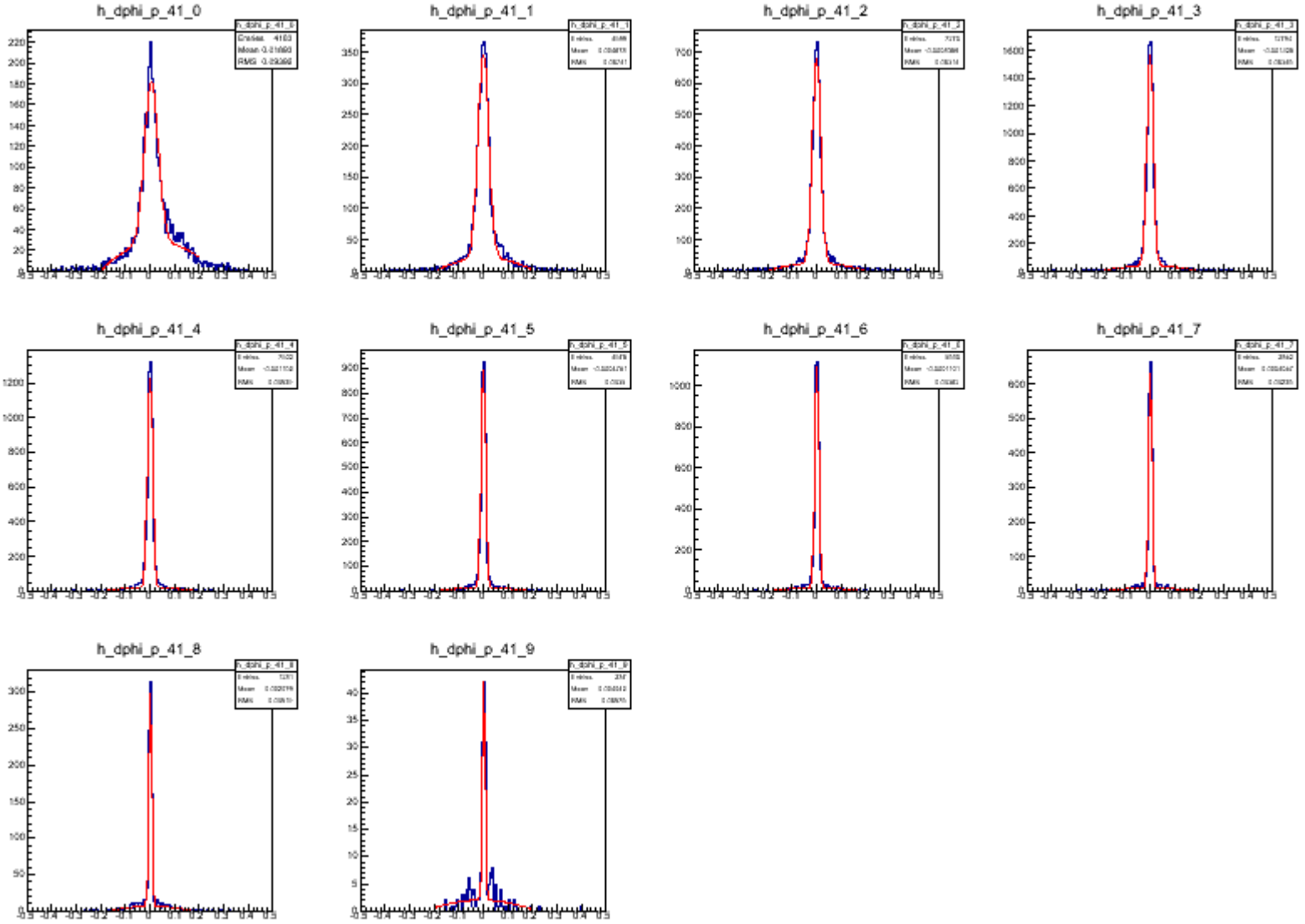
B1-B2(4)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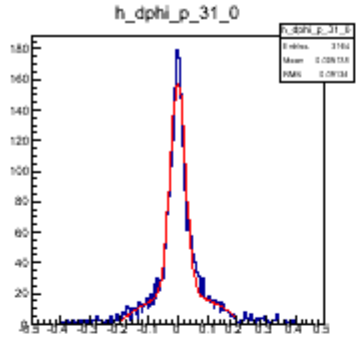
B1-B2(3)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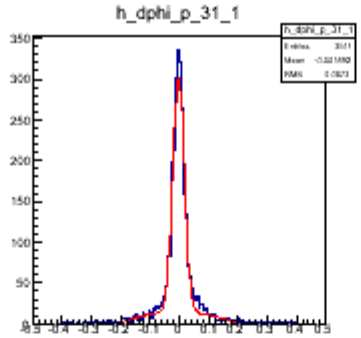
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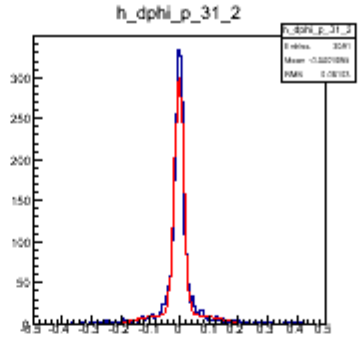
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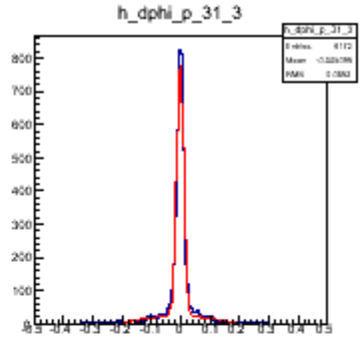
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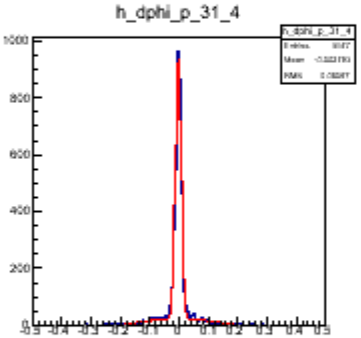
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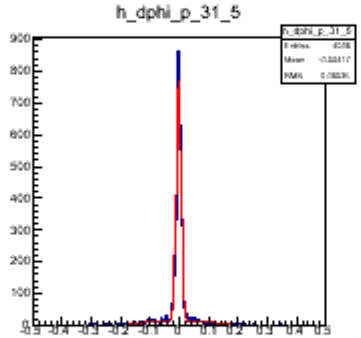
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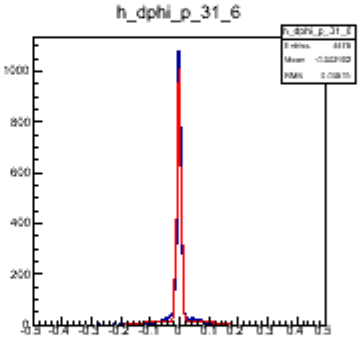
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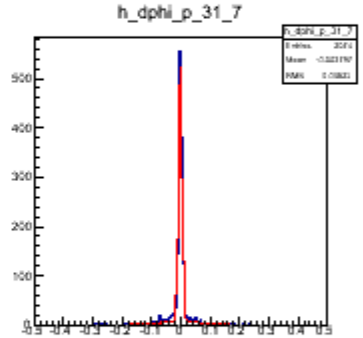
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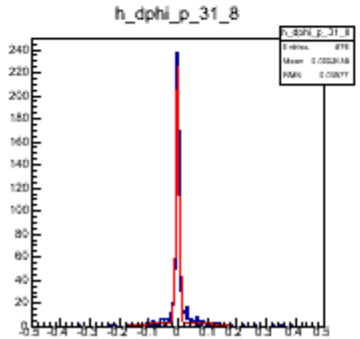
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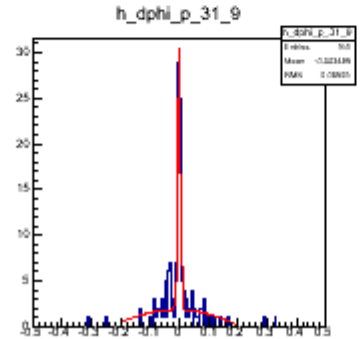
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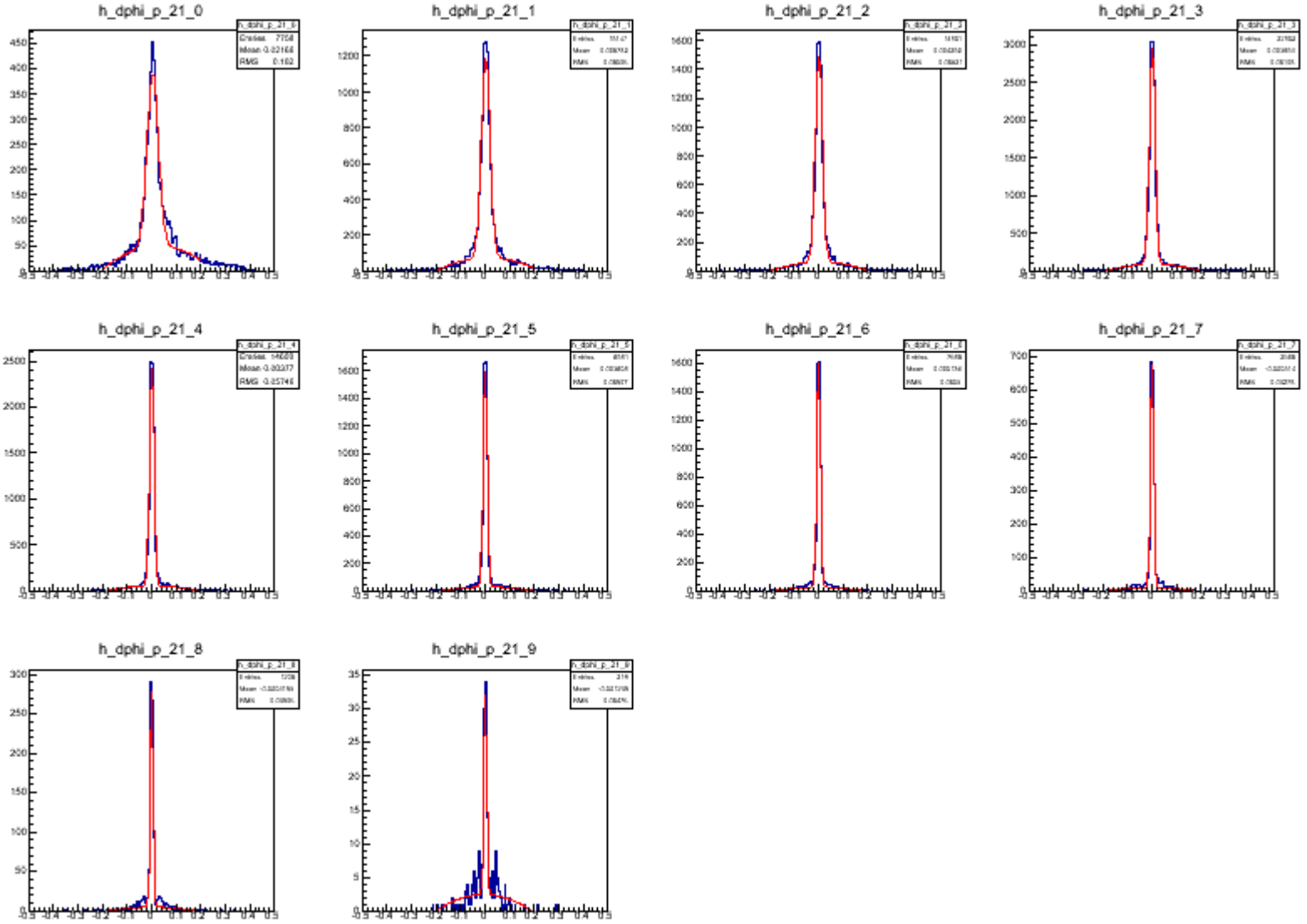
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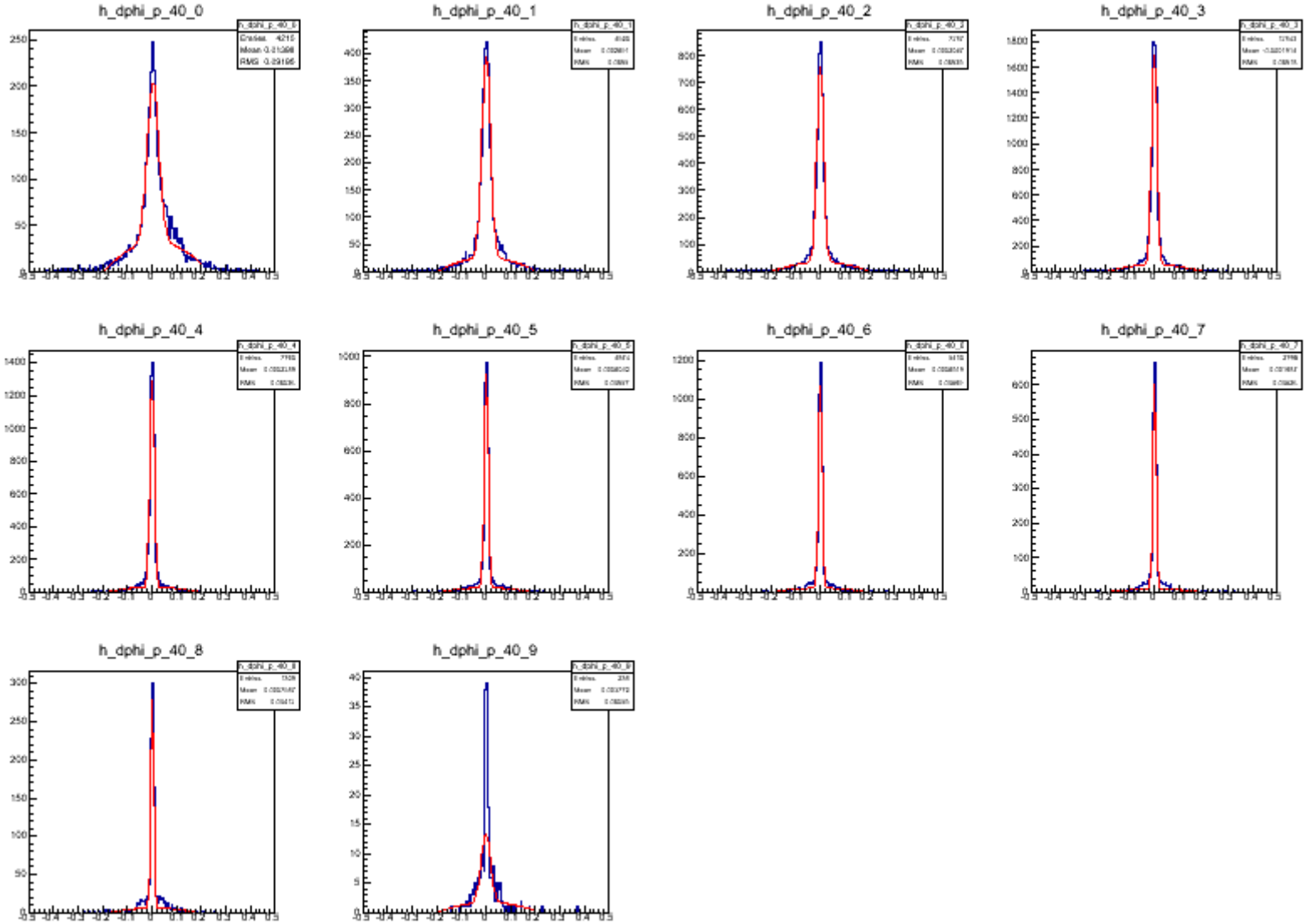
B0-B2(4)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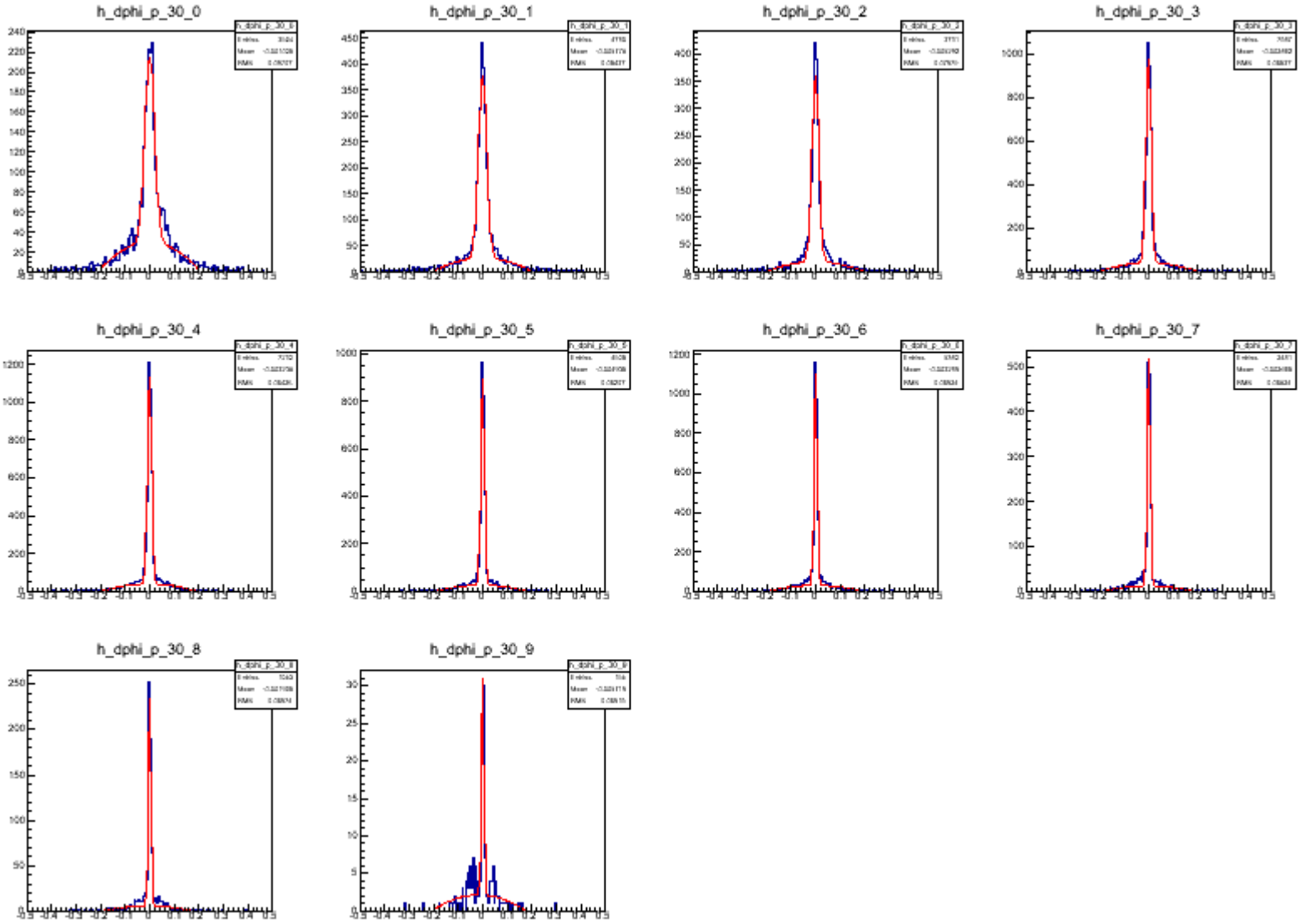
B0-B2(3)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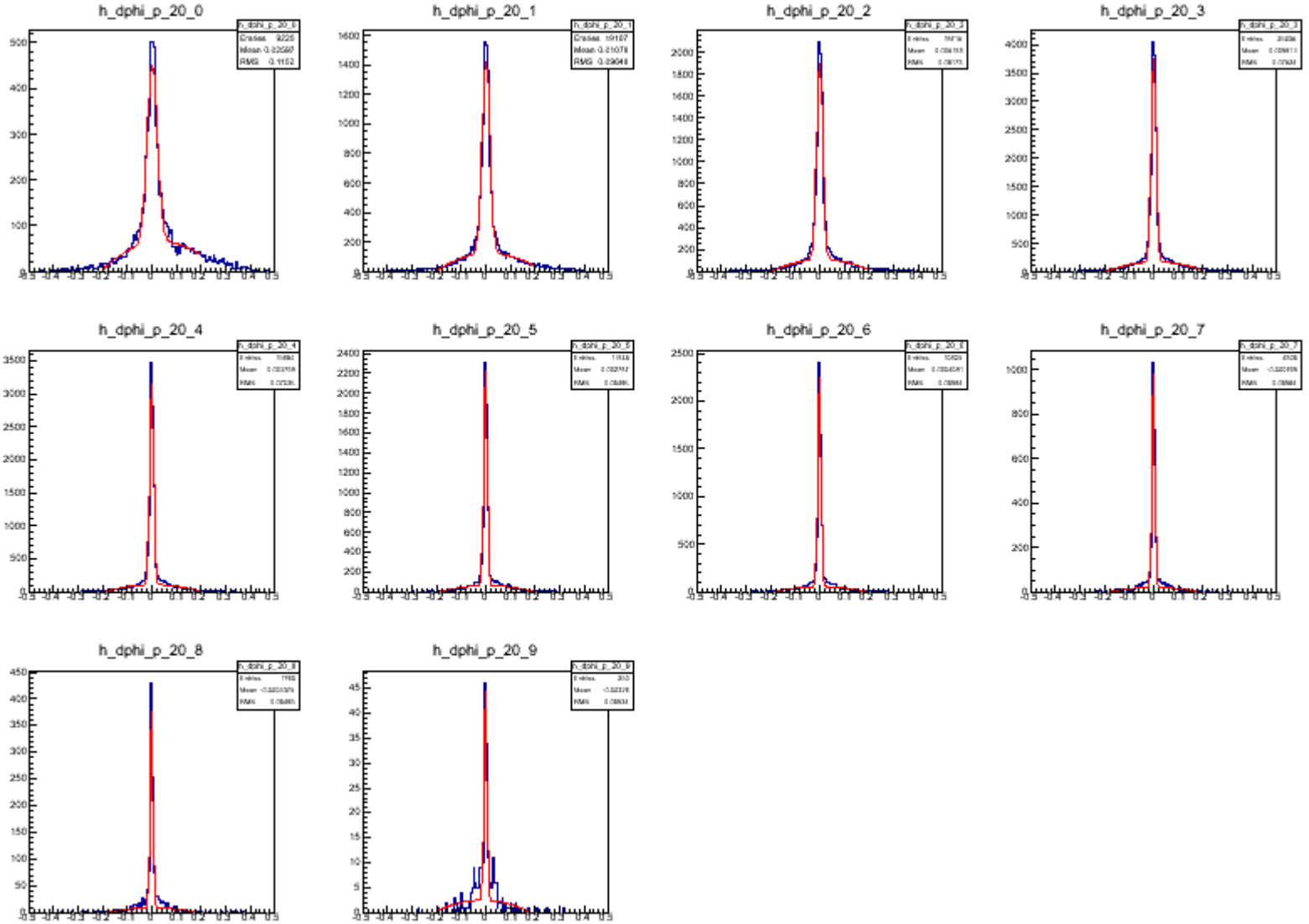
B0-B2(2)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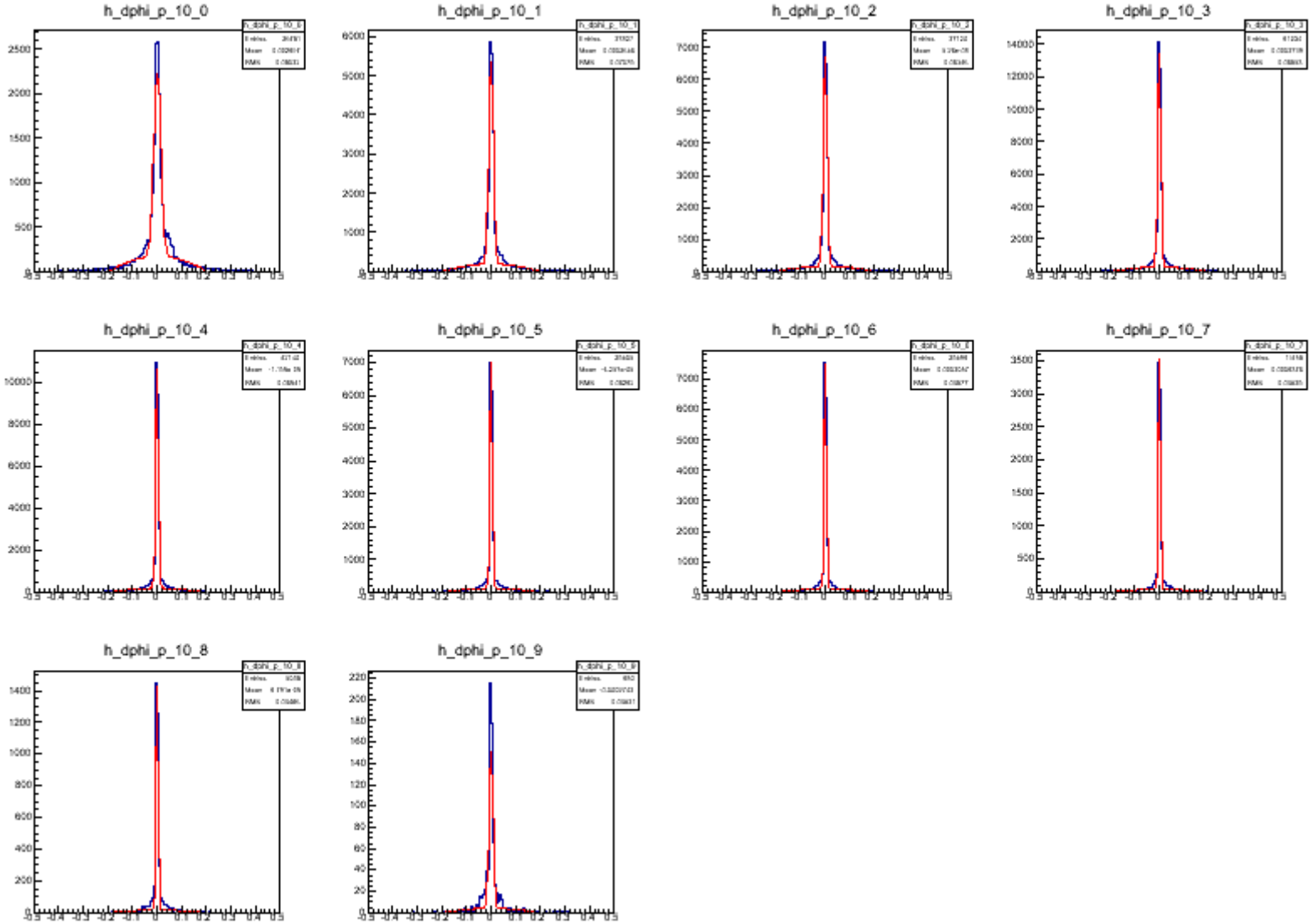
B0-B1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