

D⁺- hadron correlation update

New central result extraction macro cross checks

Jitendra Kumar
IIT Bombay, Mumbai

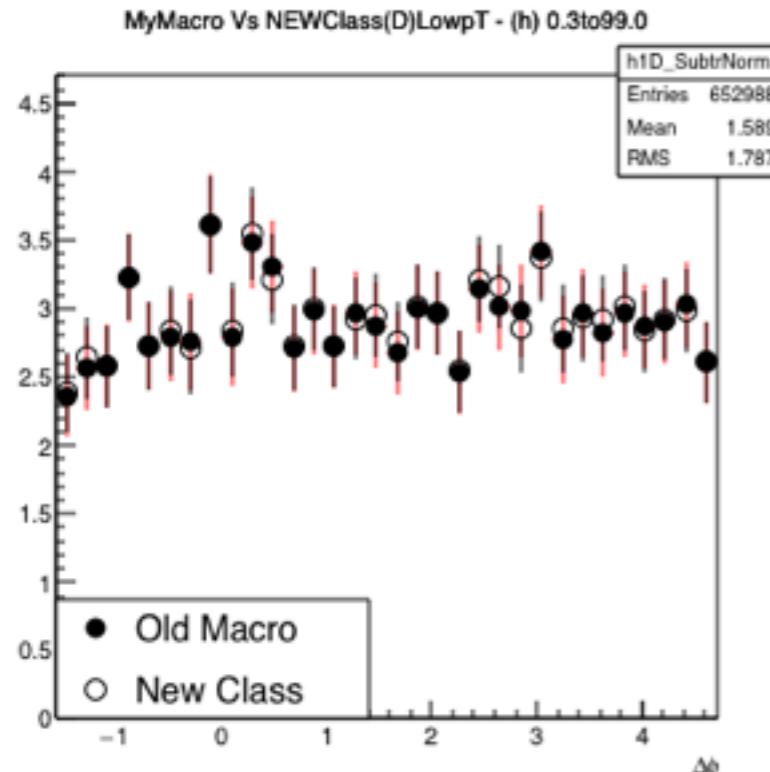
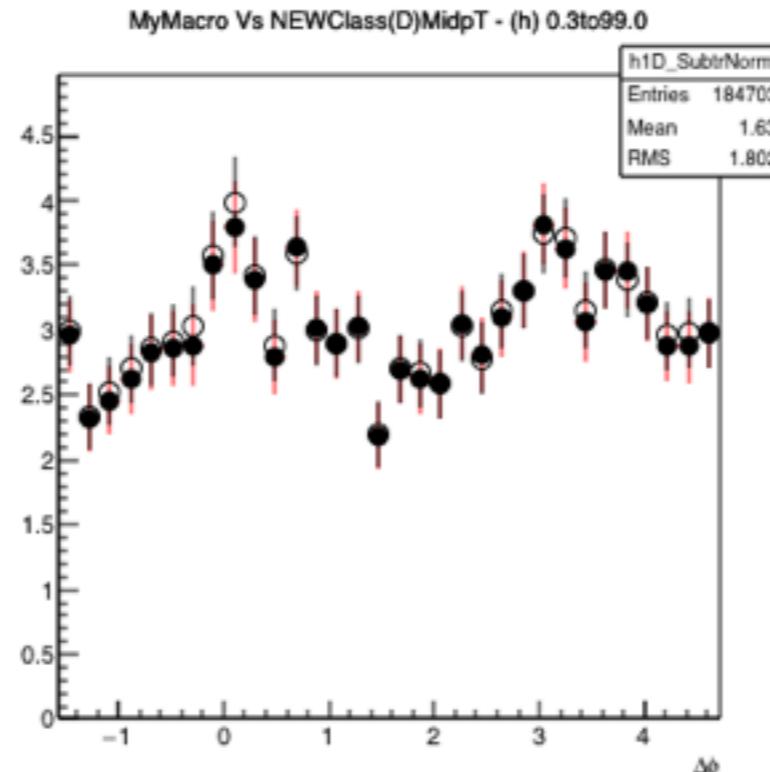
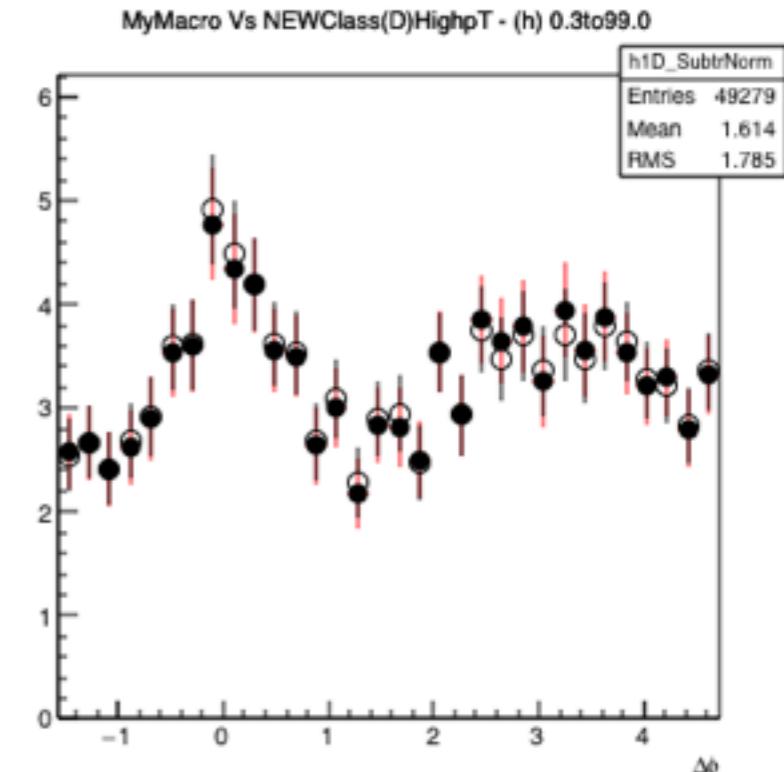
Comparison of correlations with new and old macro

Change1: Way of taking S(fit)

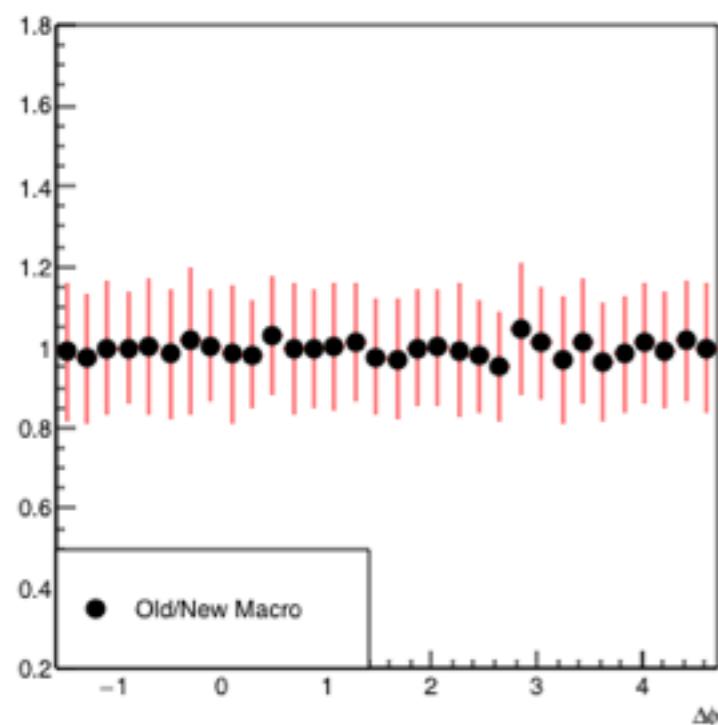
Change2: LowBinEdge Protection

Integrated Pool (New result file : ~311M Event)

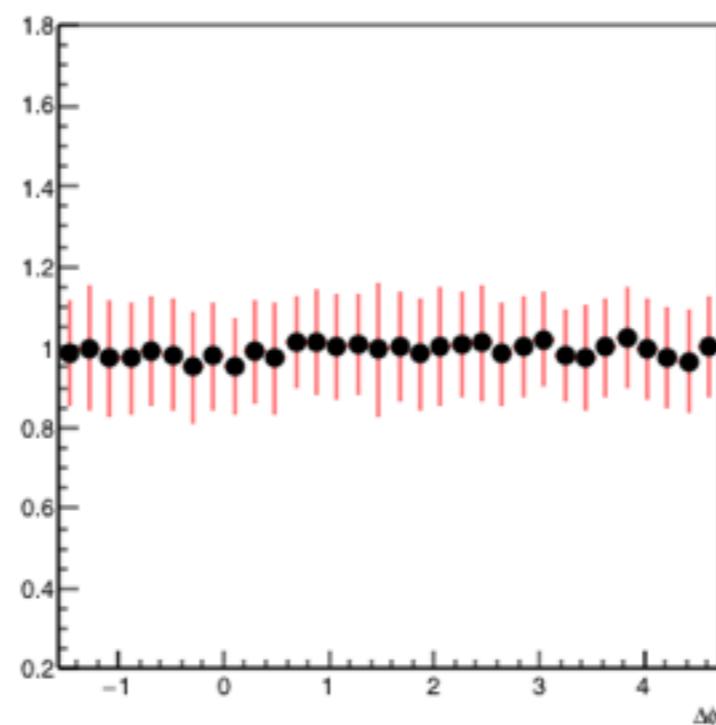
**Merged Bin used for correlations
3_5, 5_8 and 8_16**

Low p_T (3-5 GeV/c)Mid p_T (5-8 GeV/c)High p_T (8-16 GeV/c)

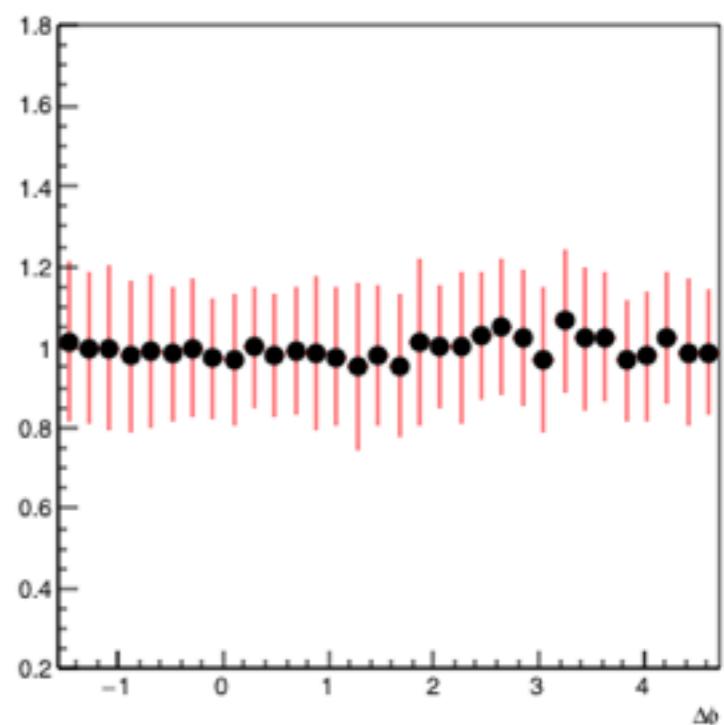
MyMacro Vs NEWClass(D)LowpT - (h) 0.3to99.0

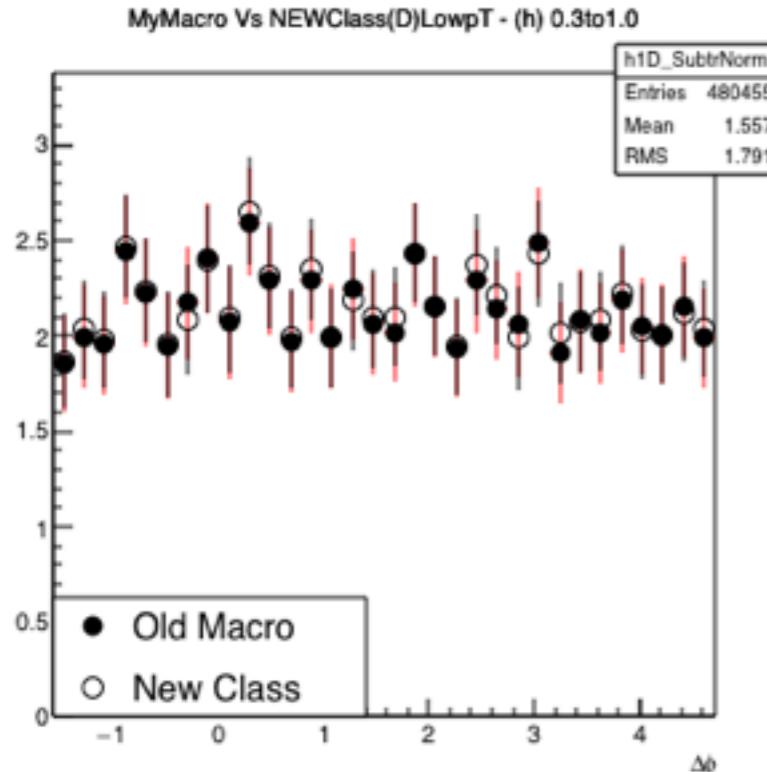
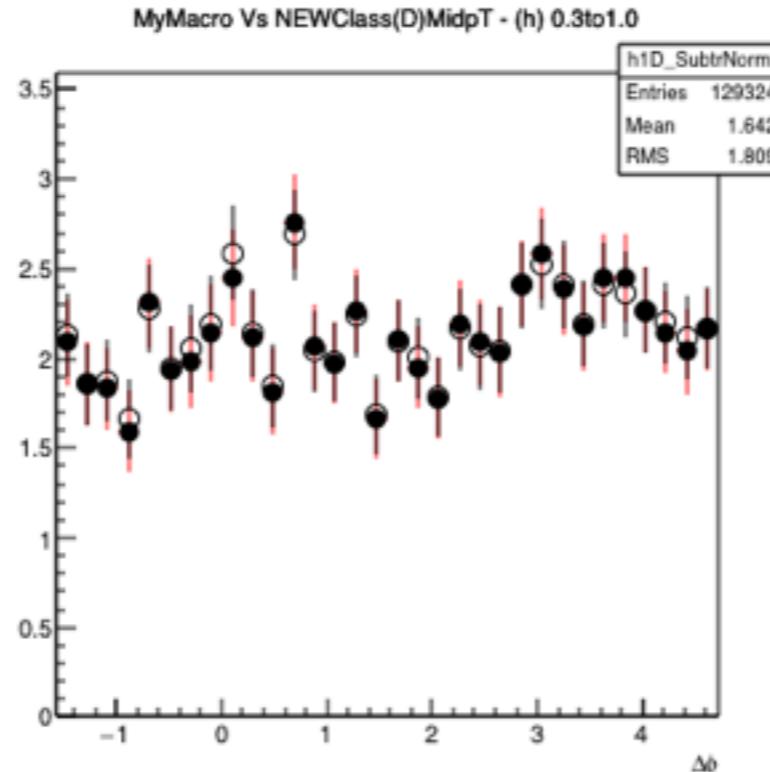
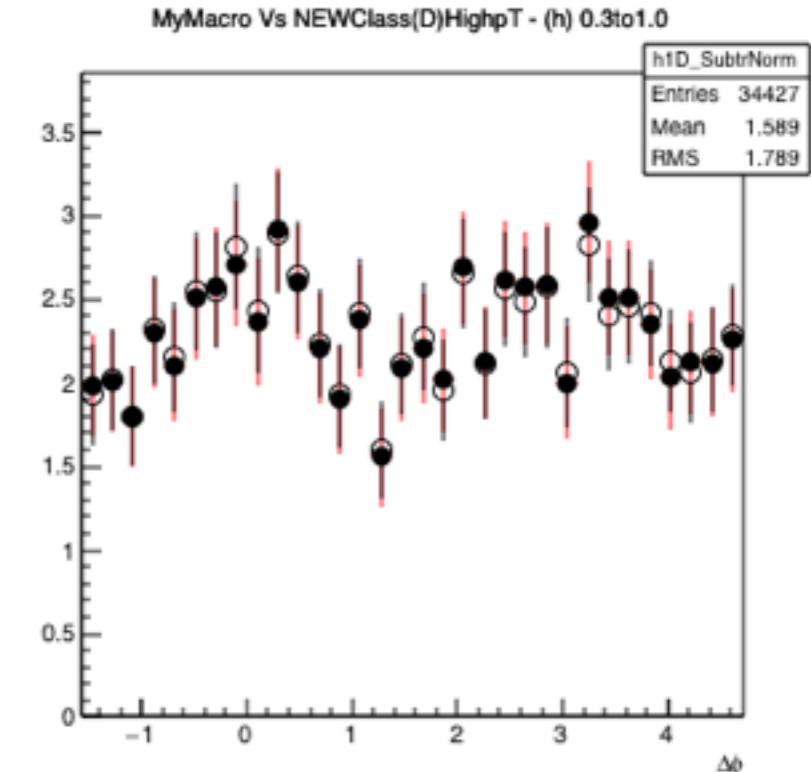


MyMacro Vs NEWClass(D)MidpT - (h) 0.3to99.0

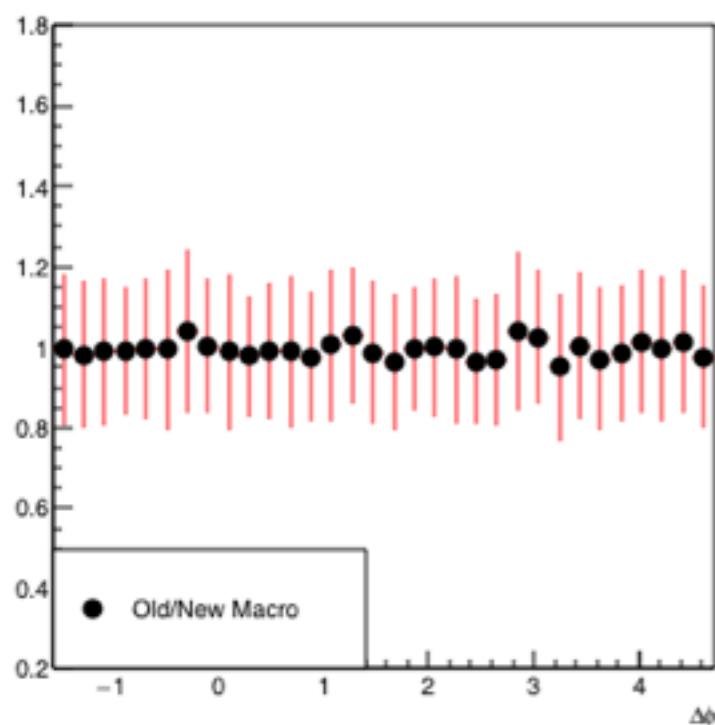


MyMacro Vs NEWClass(D)HighpT - (h) 0.3to99.0

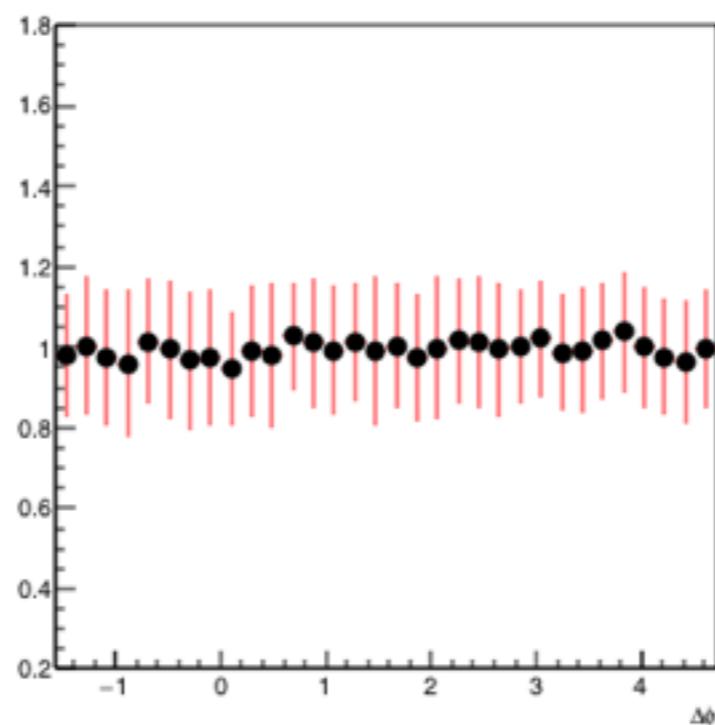


Low p_T (3-5 GeV/c)Mid p_T (5-8 GeV/c)High p_T (8-16 GeV/c)

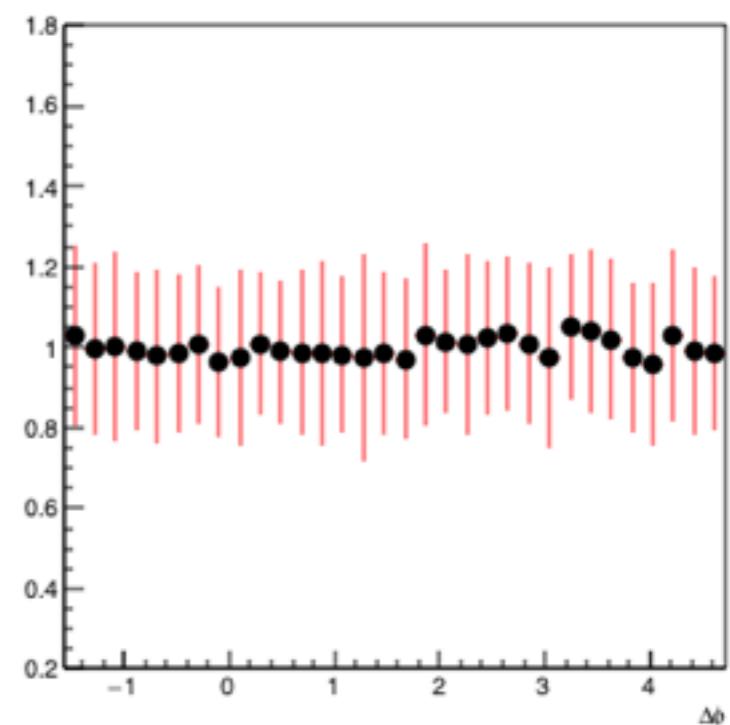
MyMacro Vs NEWClass(D)LowpT - (h) 0.3to1.0

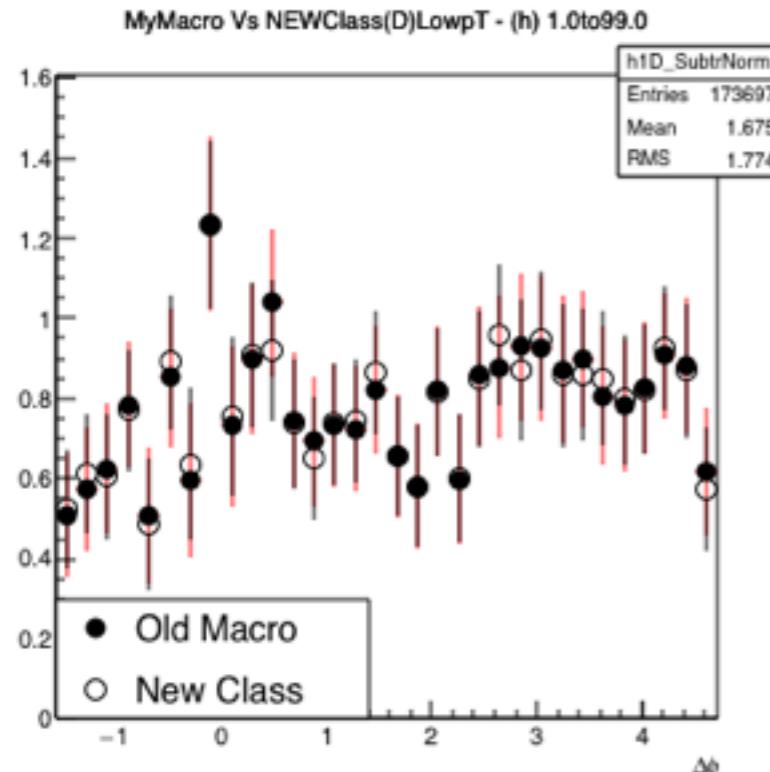
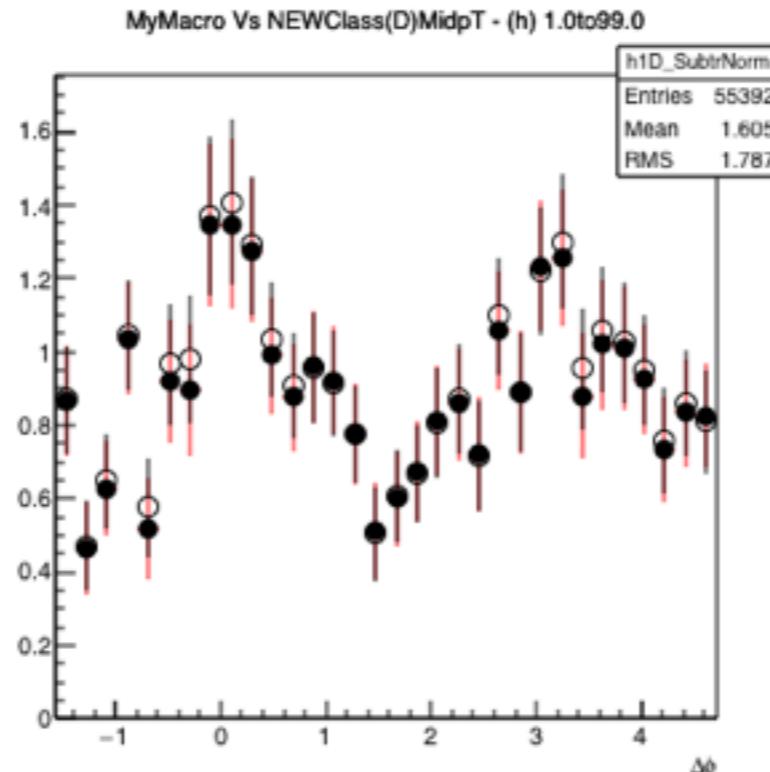
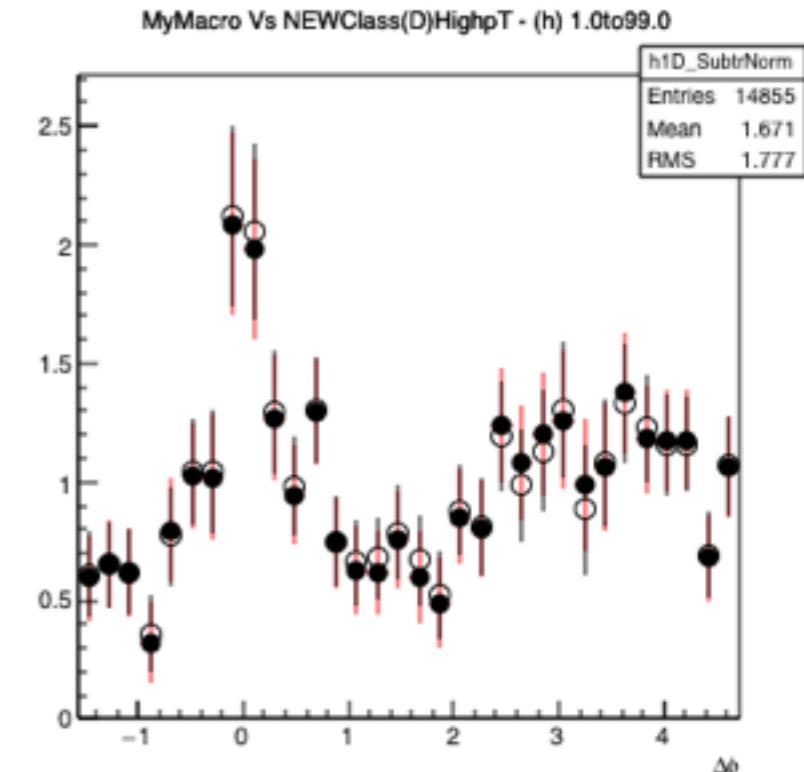


MyMacro Vs NEWClass(D)MidpT - (h) 0.3to1.0

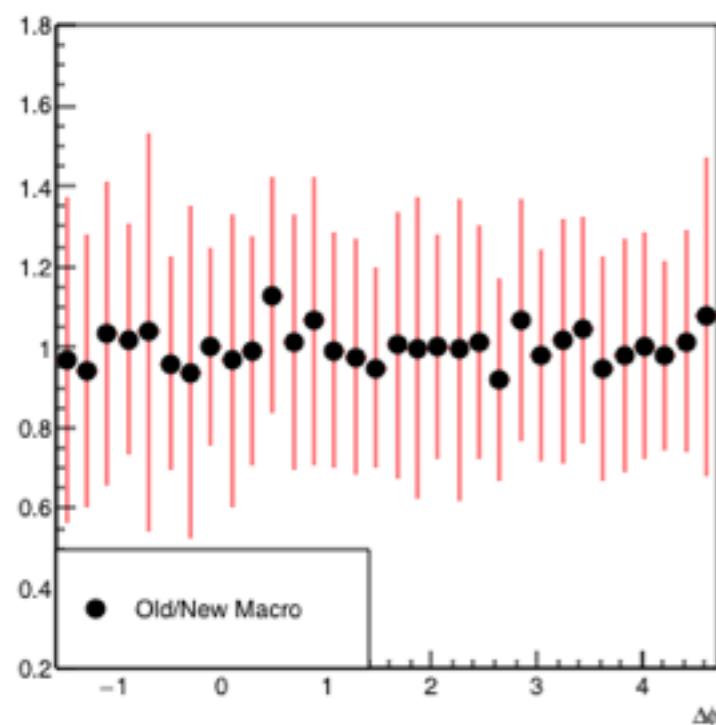


MyMacro Vs NEWClass(D)HighpT - (h) 0.3to1.0

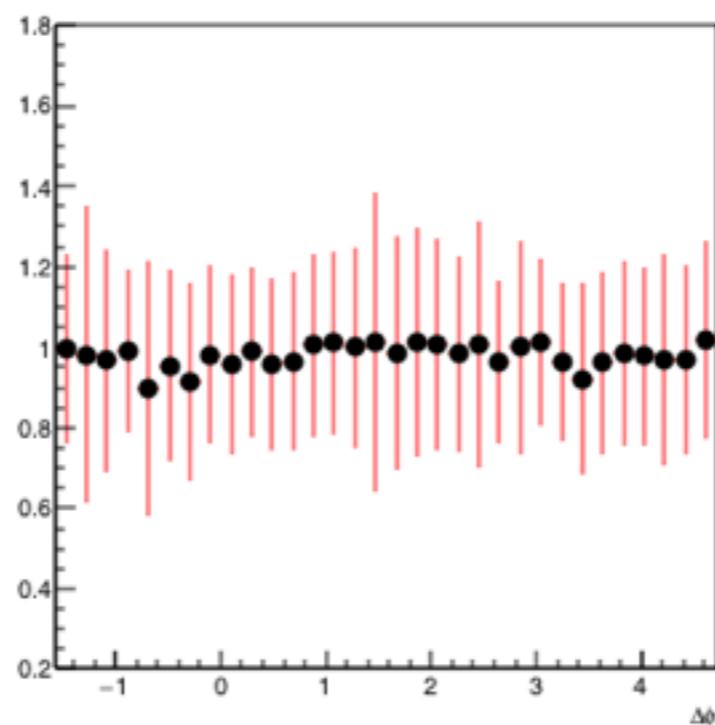


Low p_T (3-5 GeV/c)Mid p_T (5-8 GeV/c)High p_T (8-16 GeV/c)

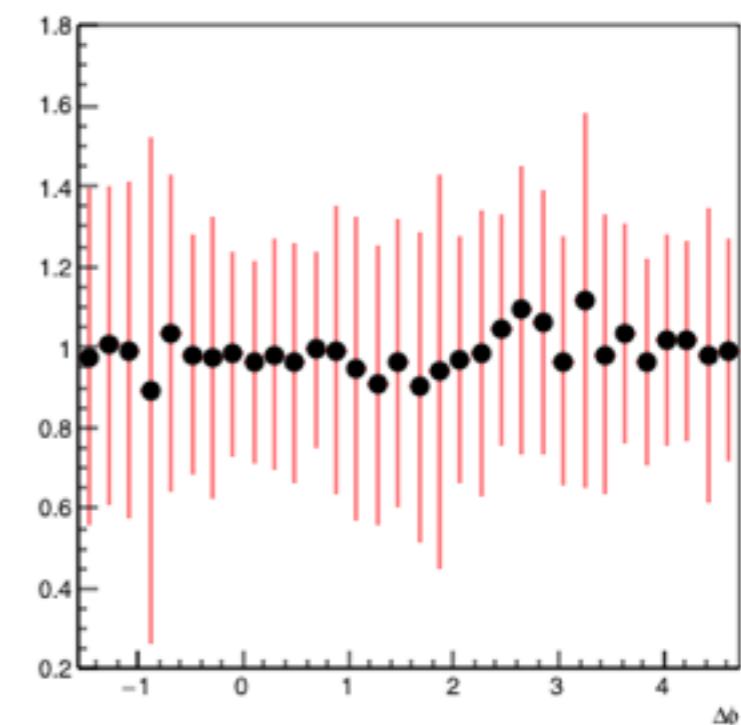
MyMacro Vs NEWClass(D)LowpT - (h) 1.0to99.0



MyMacro Vs NEWClass(D)MidpT - (h) 1.0to99.0



MyMacro Vs NEWClass(D)HighpT - (h) 1.0to99.0



Integrated Pool (New result file : ~311M Event)

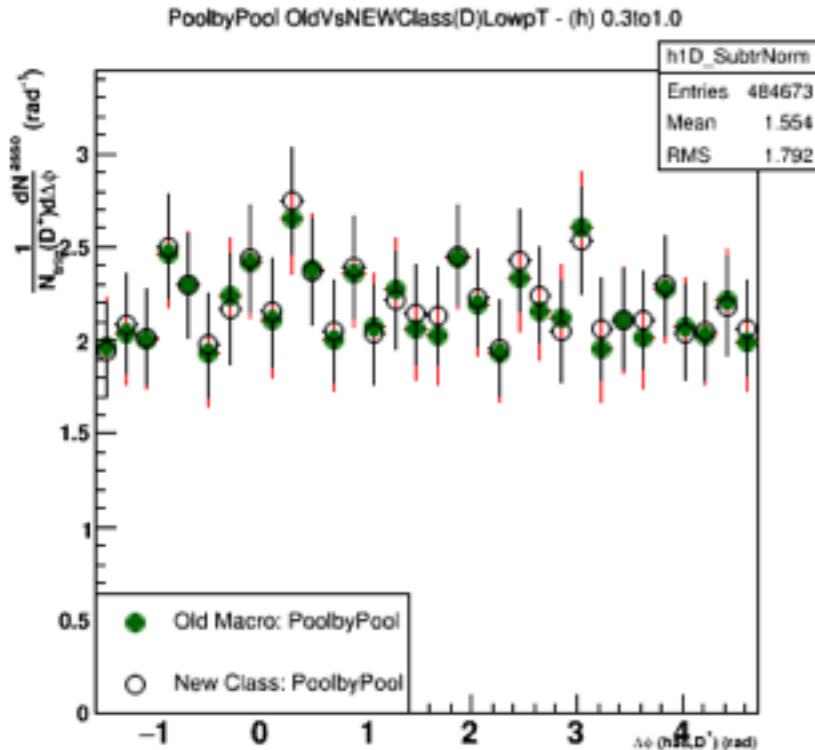
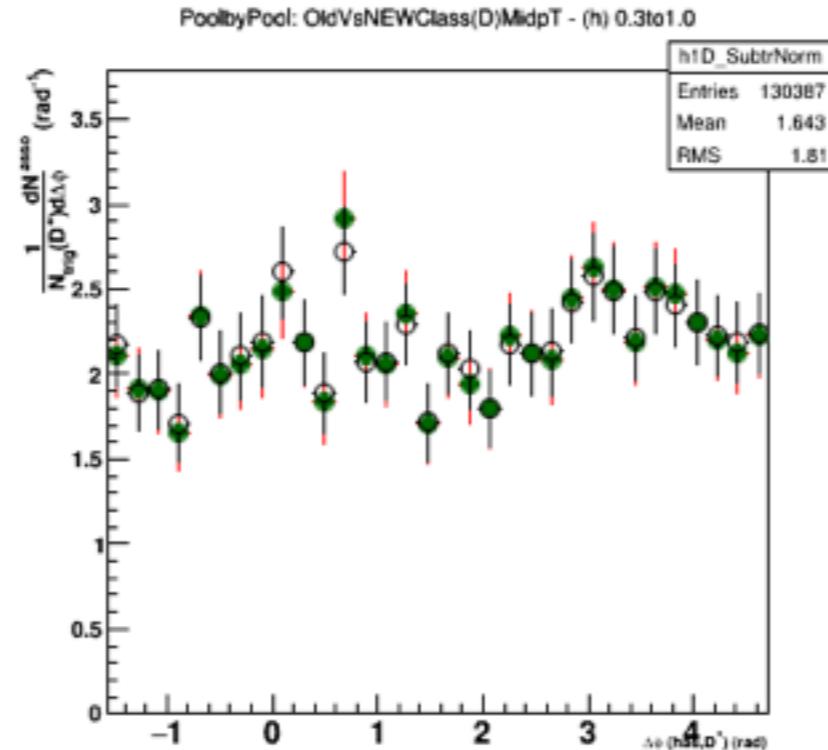
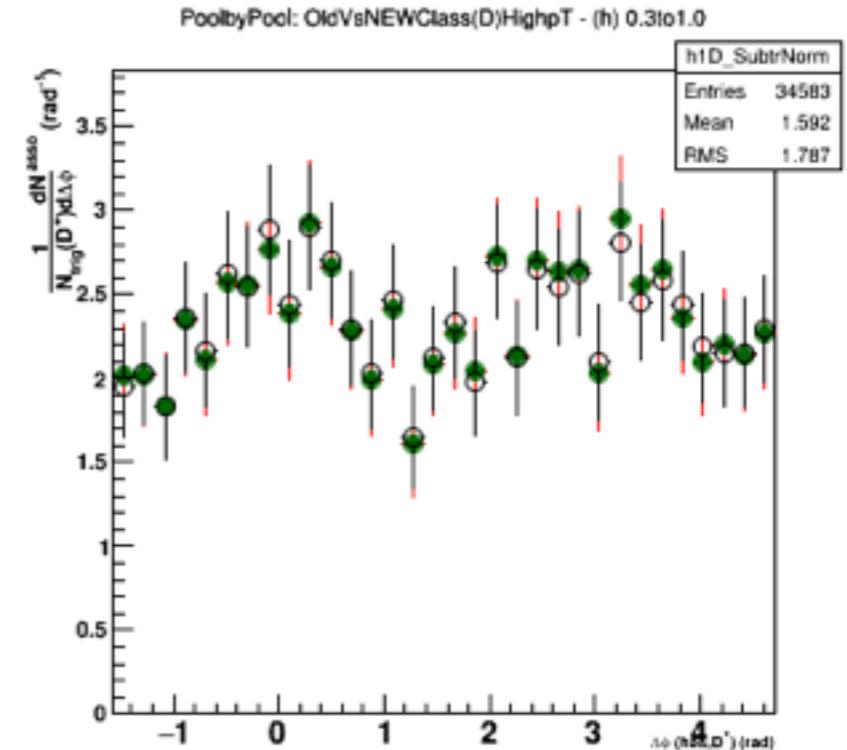
Merged Bin used for correlations

3_5, 5_8 and 8_16

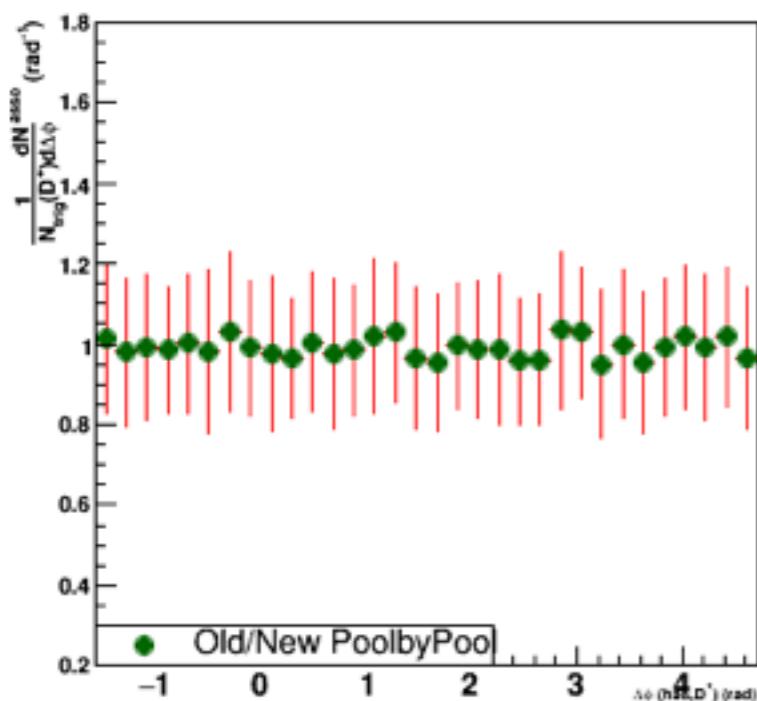
1. Merged bin now used but no such effect w.r.t to binbybin See later on slides
2. 3-5% variation in correlations for all different threshold .
3. Results 100% same with old settings. (S(fit), LowBinEdge() Safety)

Pool by Pool (New result file : ~311M Event)

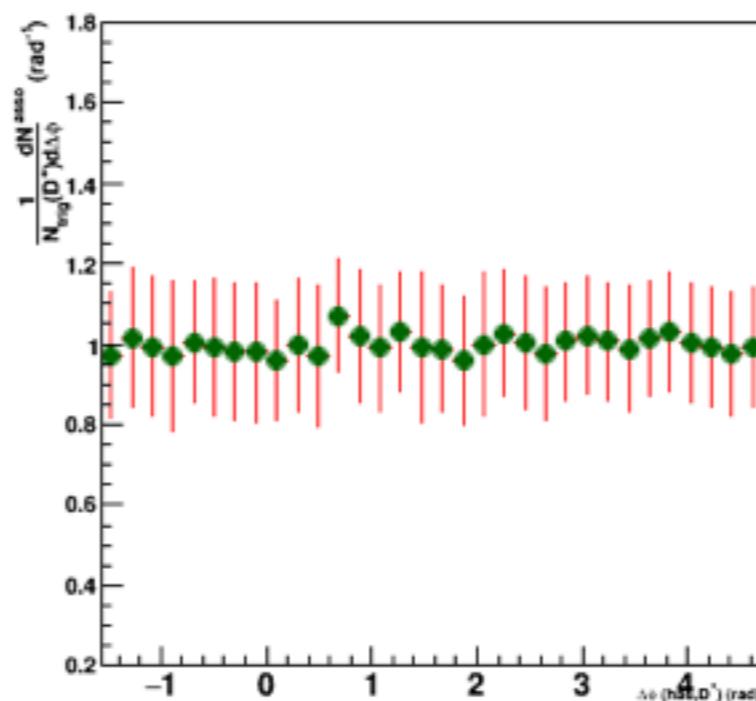
**Merged Bin used for correlations
3_5, 5_8 and 8_16**

Low p_T (3-5 GeV/c)Mid p_T (5-8 GeV/c)High p_T (8-16 GeV/c)

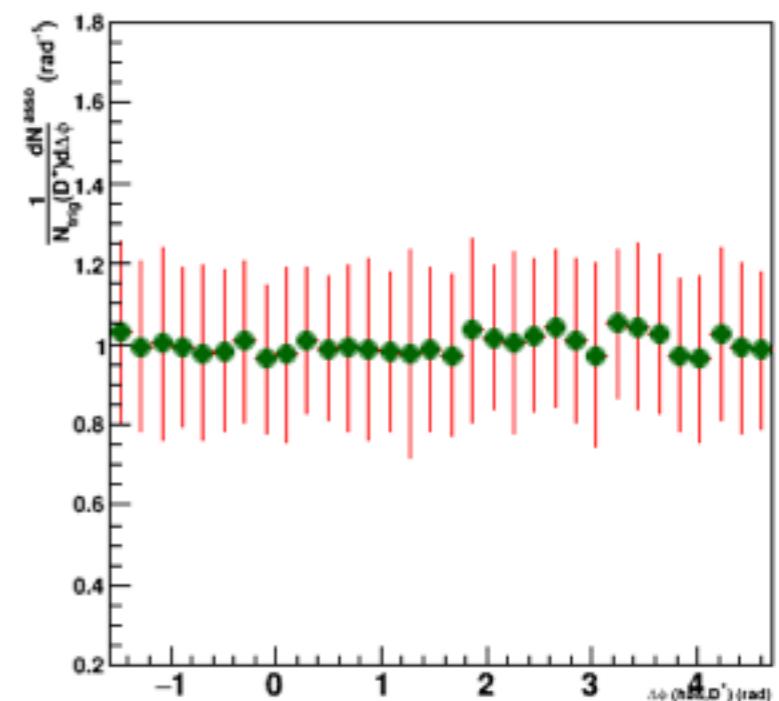
PoolbyPool: OldVsNEWClass(D)LowpT - (h) 0.3to1.0



PoolbyPool: OldVsNEWClass(D)MidpT - (h) 0.3to1.0



PoolbyPool: OldVsNEWClass(D)HighpT - (h) 0.3to1.0

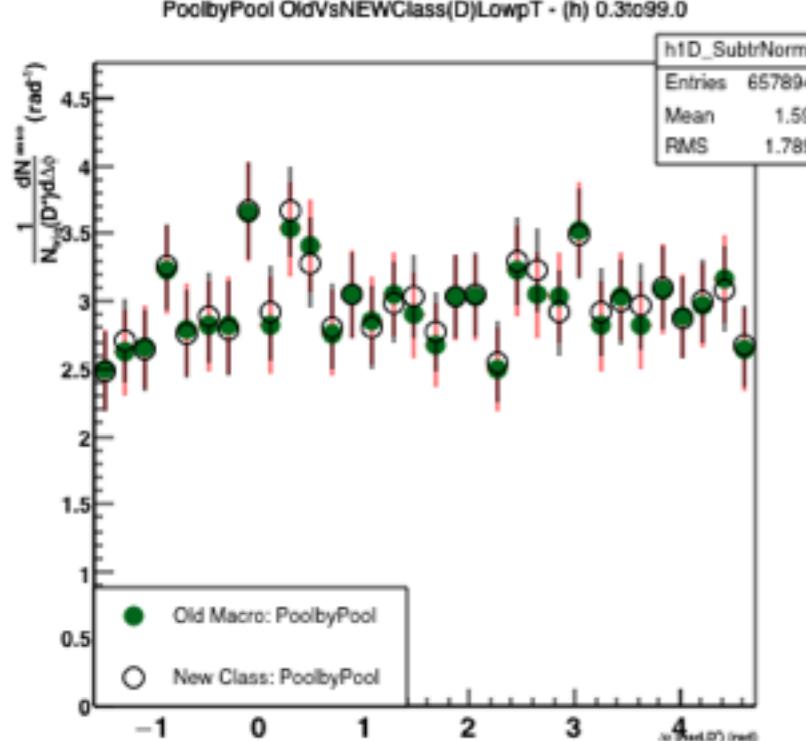


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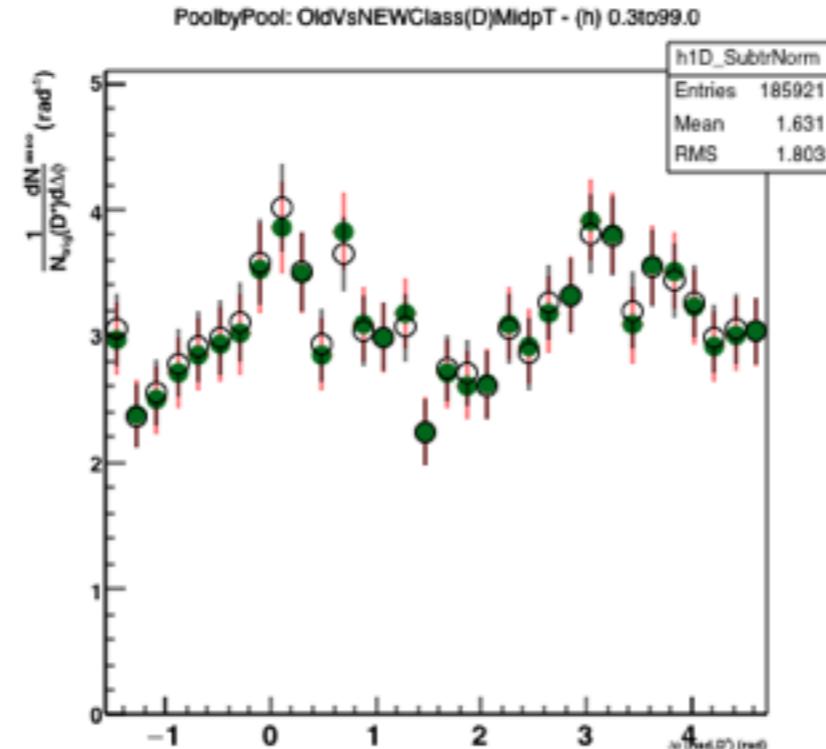
Old Vs New Macro: Via PoolbyPool

Asso $p_T > 0.3 \text{ GeV}/c$

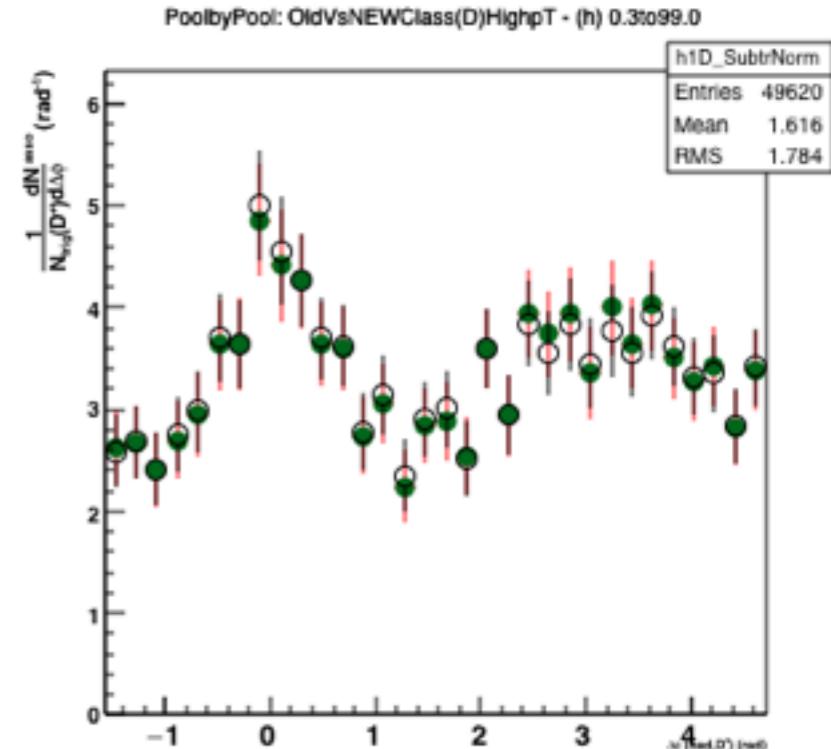
Low p_T (3-5 GeV/c)



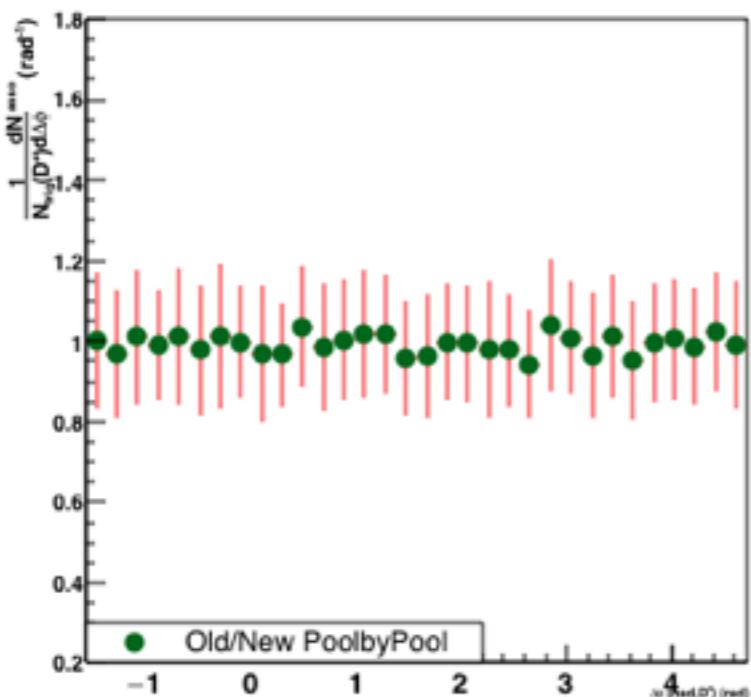
Mid p_T (5-8 GeV/c)



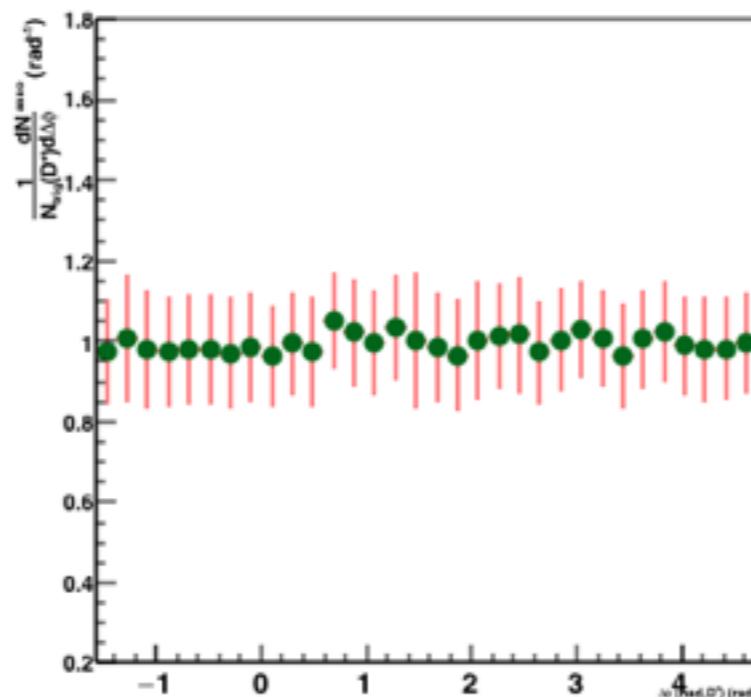
High p_T (8-16 GeV/c)



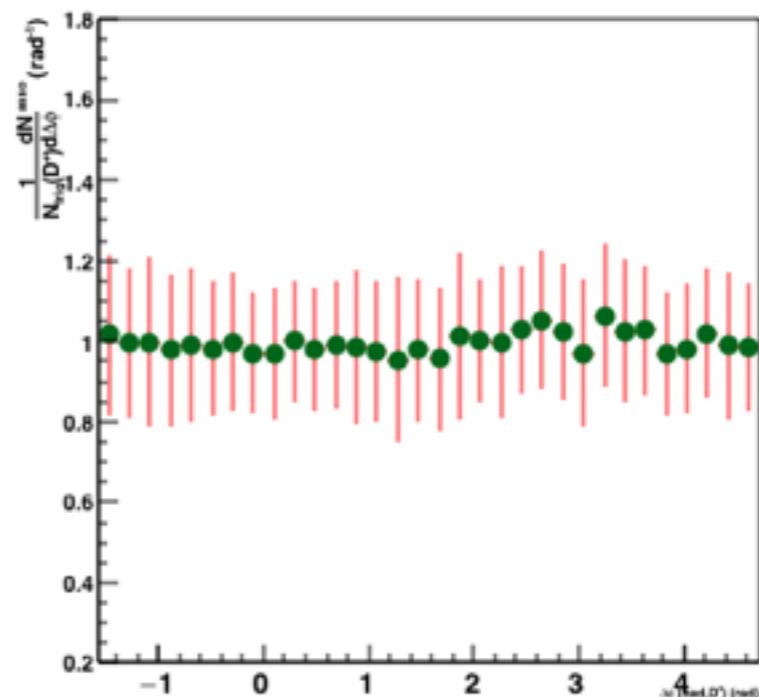
PoolbyPool: OldVsNEWClass(D)LowpT - (h) 0.3to99.0



PoolbyPool: OldVsNEWClass(D)MidpT - (h) 0.3to99.0



PoolbyPool: OldVsNEWClass(D)HighpT - (h) 0.3to99.0

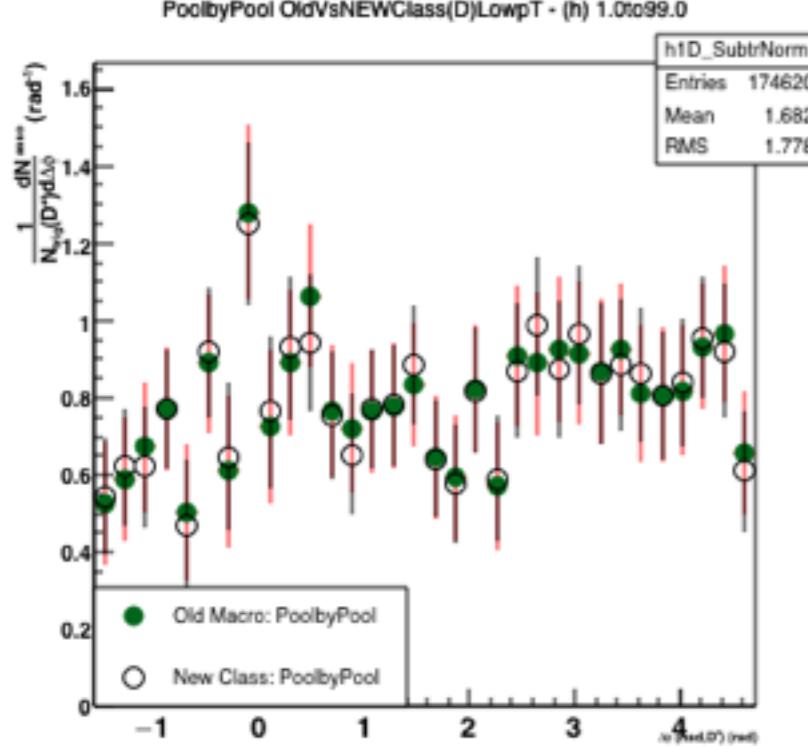


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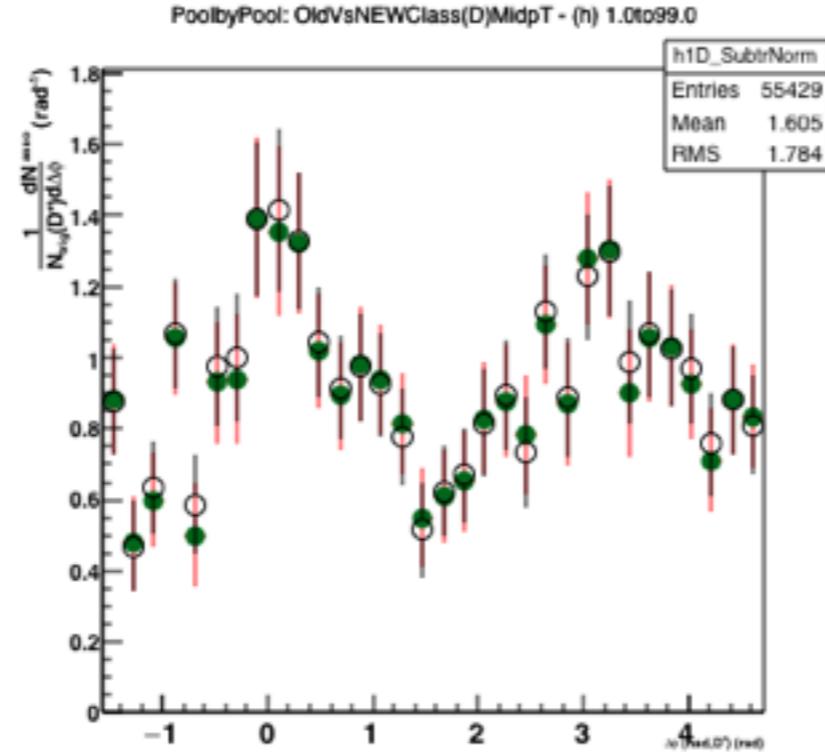
Old Vs New Macro: Via PoolbyPool

Asso $p_T > 1.0 \text{ GeV}/c$

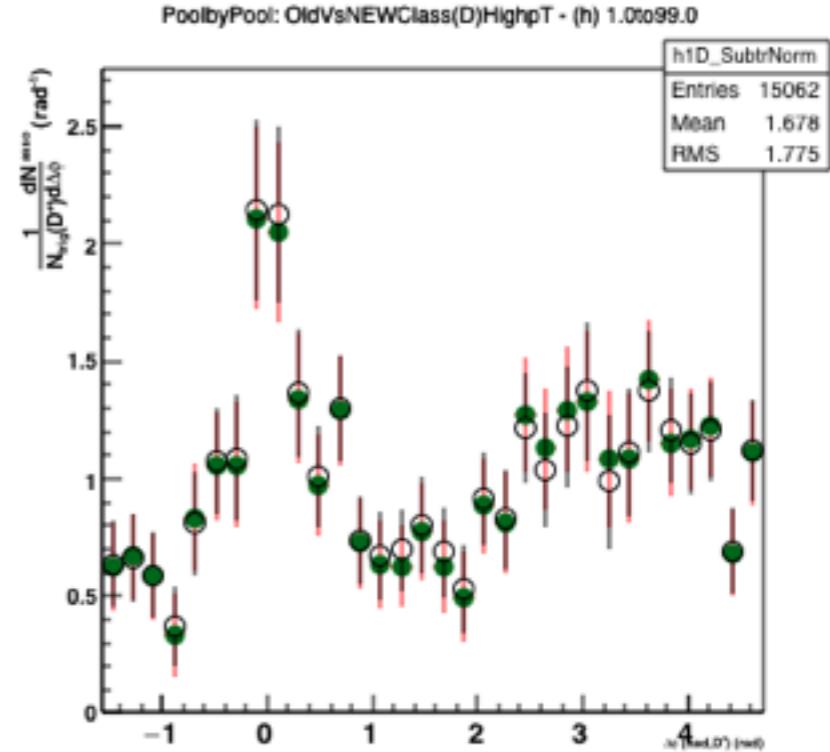
Low p_T (3-5 GeV/c)



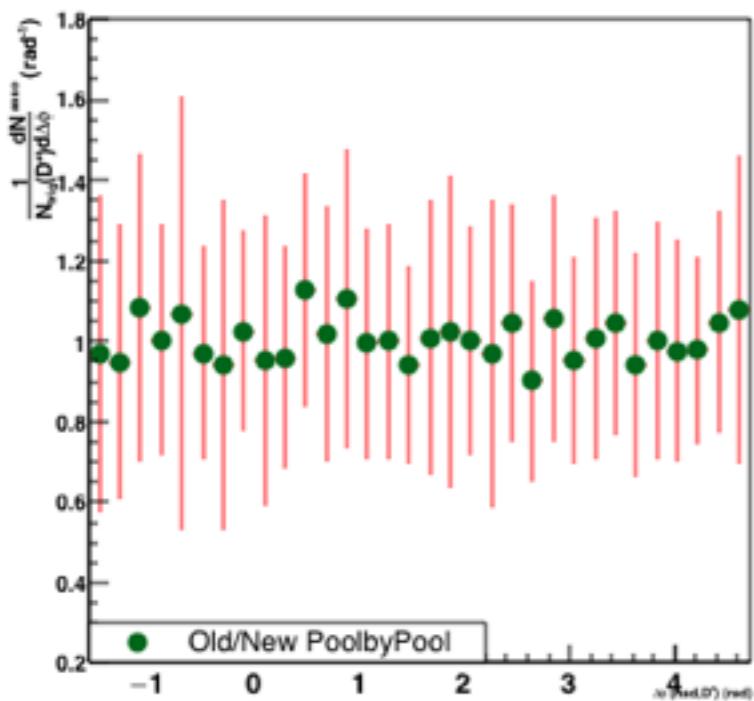
Mid p_T (5-8 GeV/c)



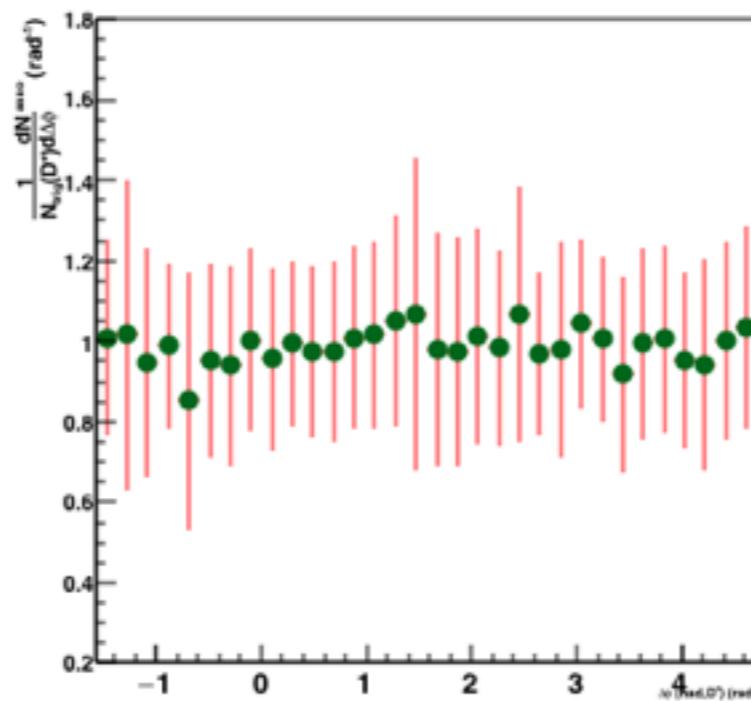
High p_T (8-16 GeV/c)



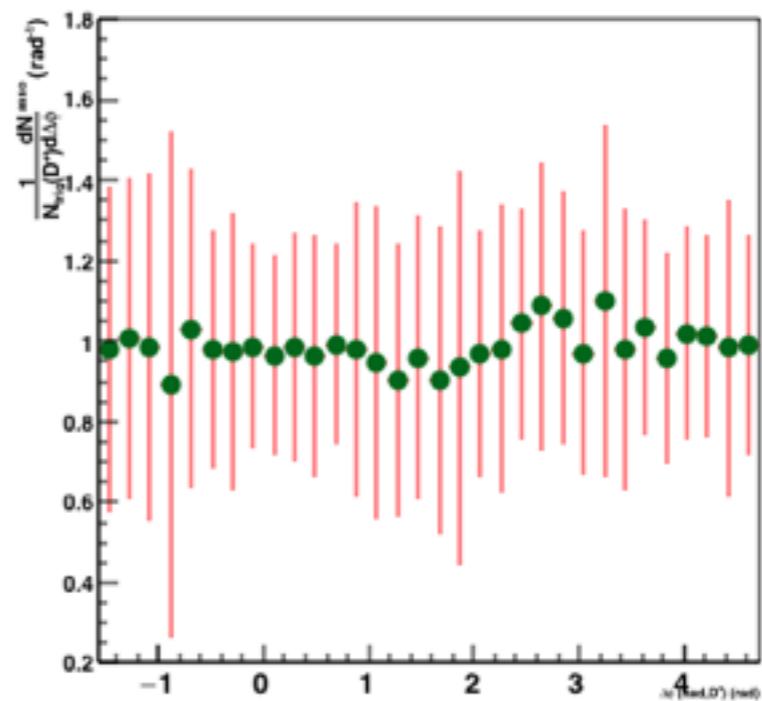
PoolbyPool: OldVsNEWClass(D)LowpT - (h) 1.0to99.0



PoolbyPool: OldVsNEWClass(D)MidpT - (h) 1.0to99.0



PoolbyPool: OldVsNEWClass(D)HighpT - (h) 1.0to99.0



Pool by Pool (New result file : ~311M Event)

Merged Bin used for correlations

3_5, 5_8 and 8_16

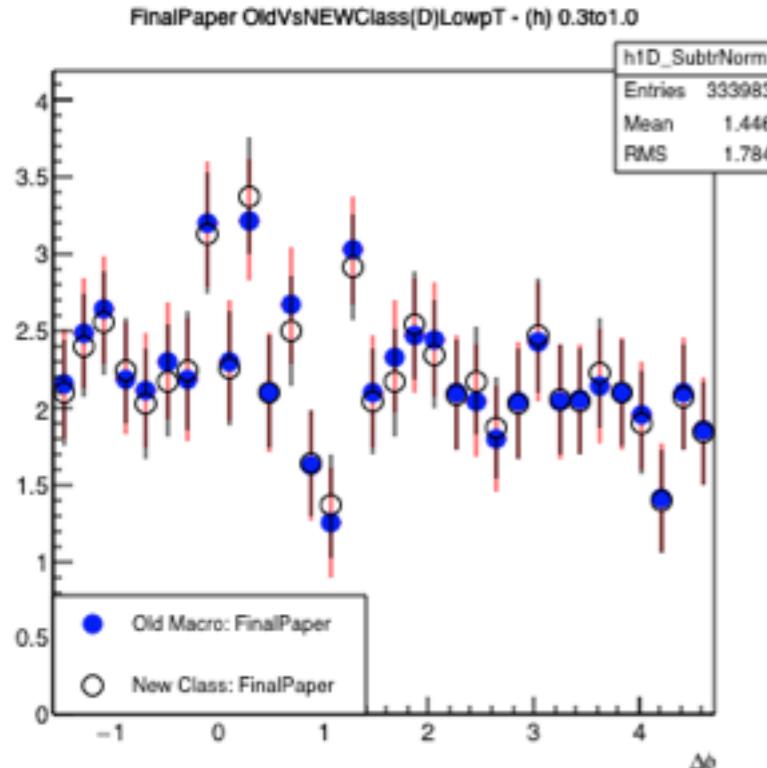
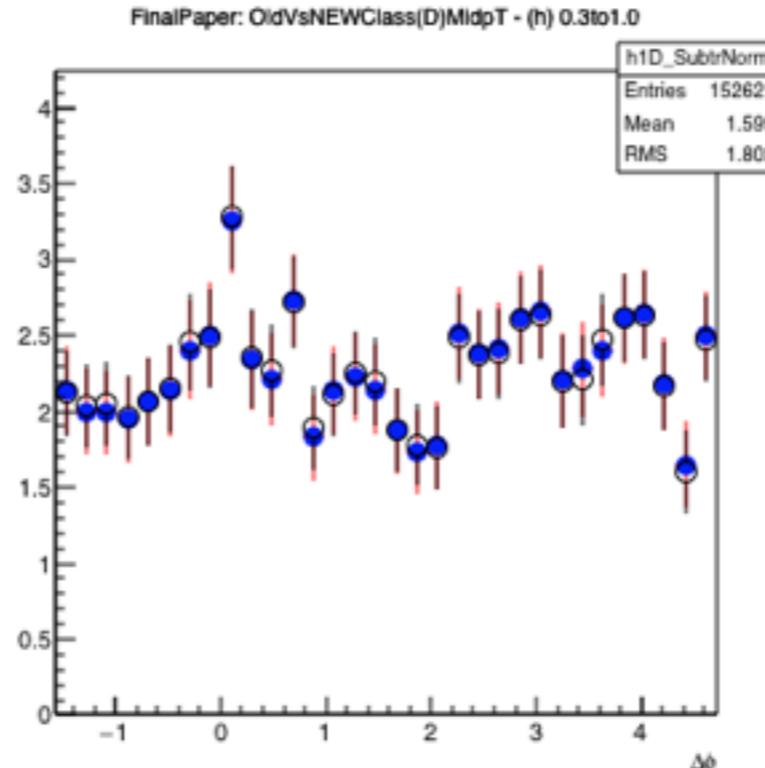
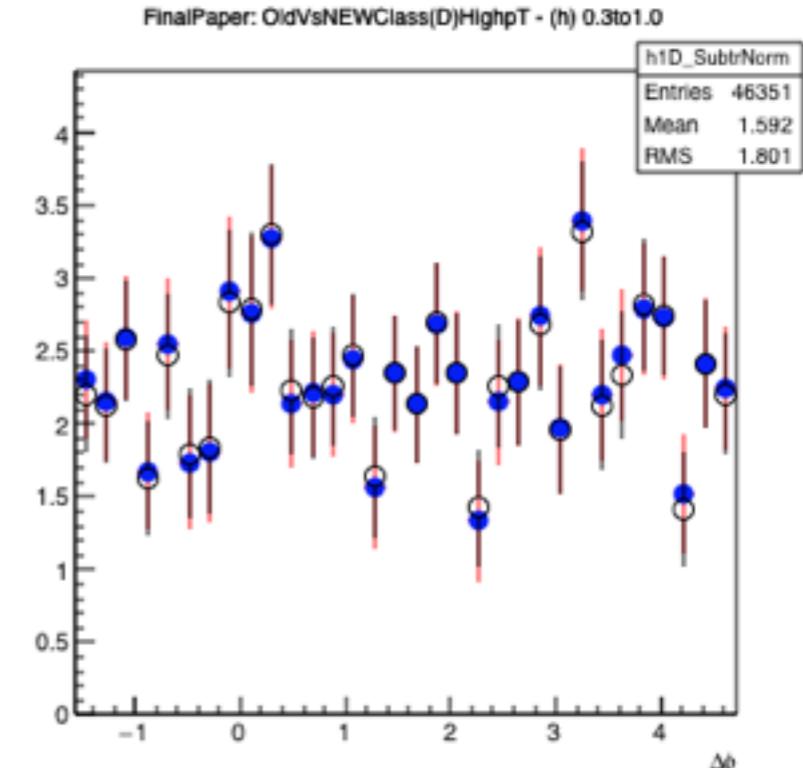
1. Merged bin now used but no such effect w.r.t to binbybin See later on slides
2. 0-5-7% variation in correlations for all different threshold .

****Method is different Event -> Pool and Pool->Event**

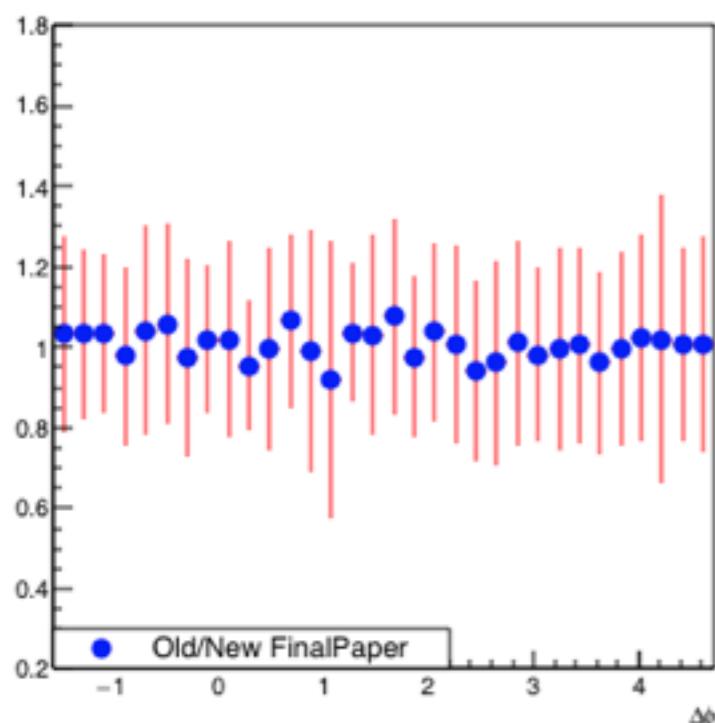
Paper Results (Old result file (pass2) : ~270M Event)

Merged Bin** used for correlations

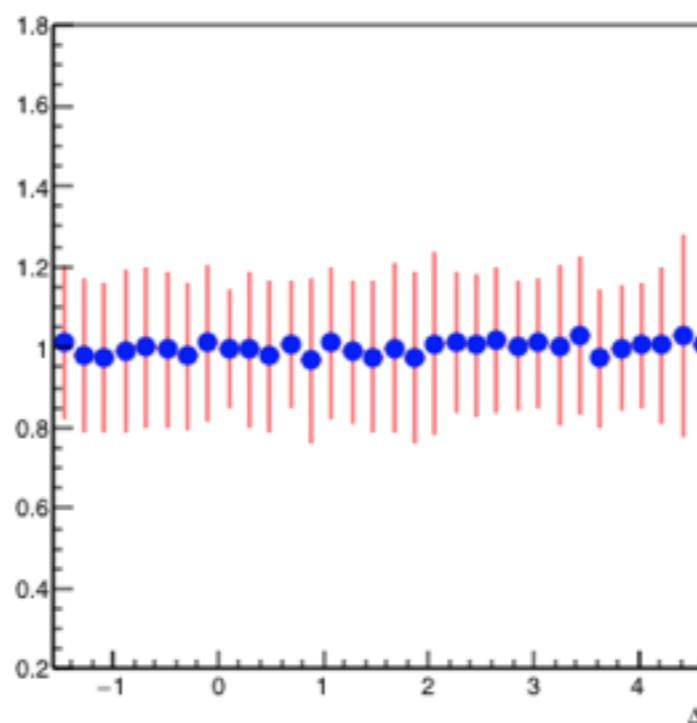
3_5, 5_8 and 8_16

Low p_T (3-5 GeV/c)Mid p_T (5-8 GeV/c)High p_T (8-16 GeV/c)

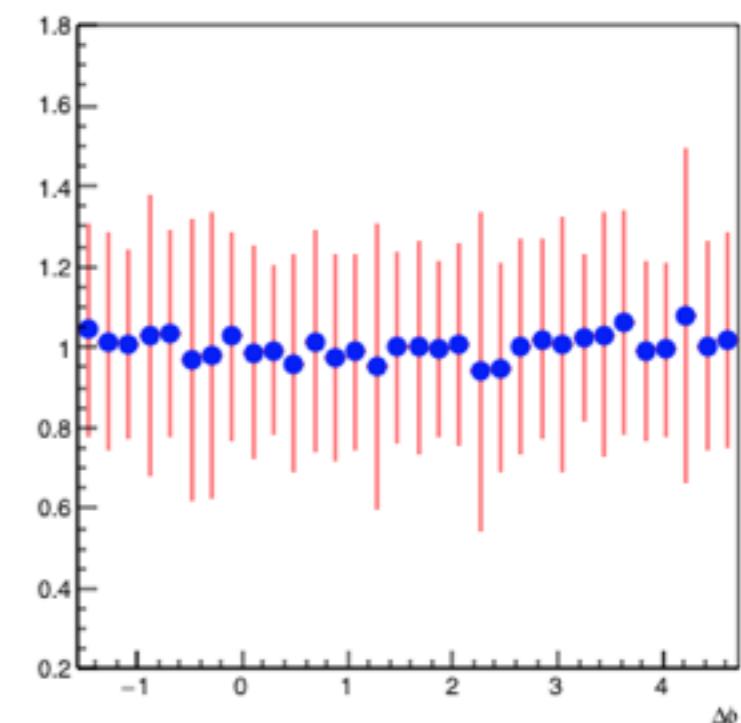
FinalPaper: OldVsNEWClass(D)LowpT - (h) 0.3to1.0

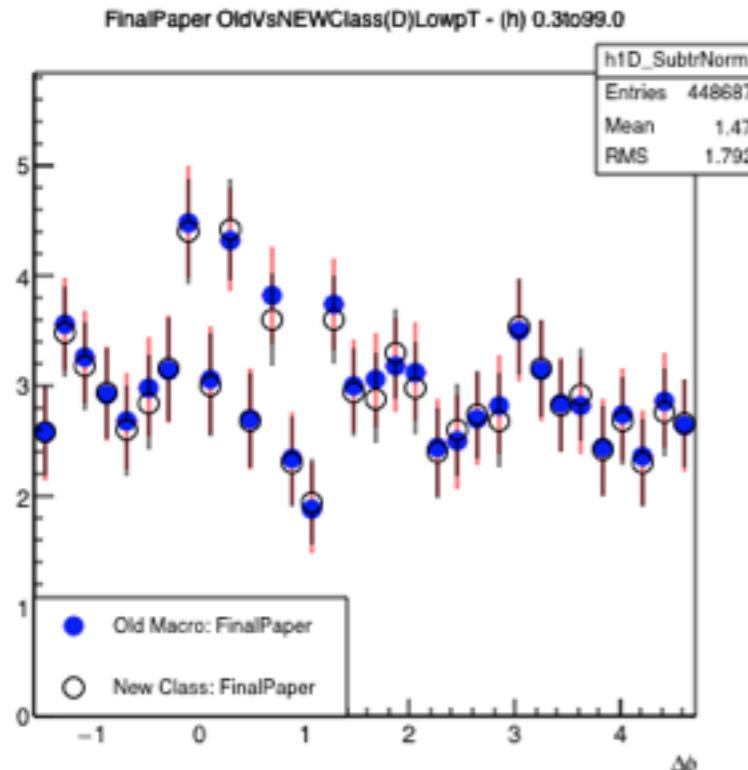
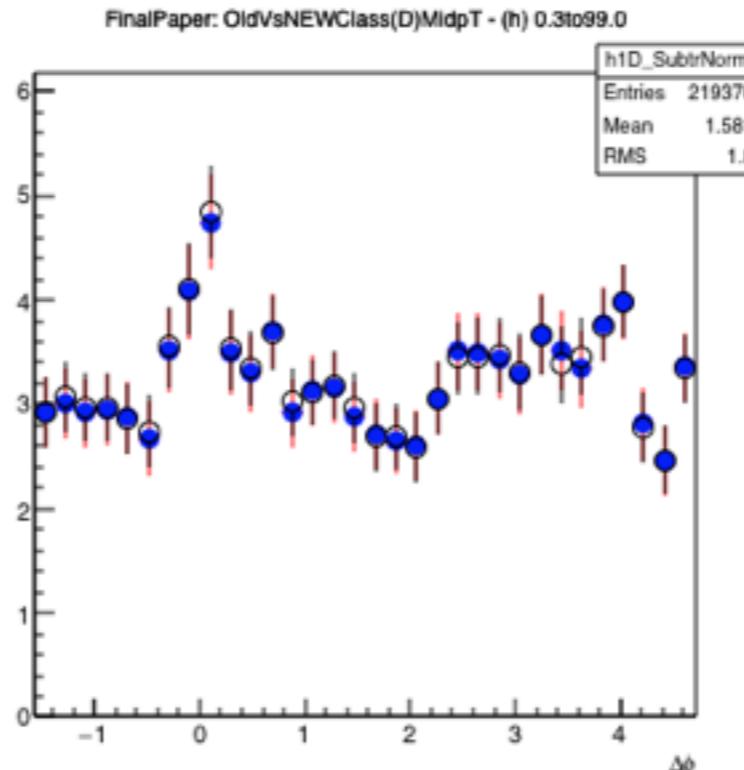
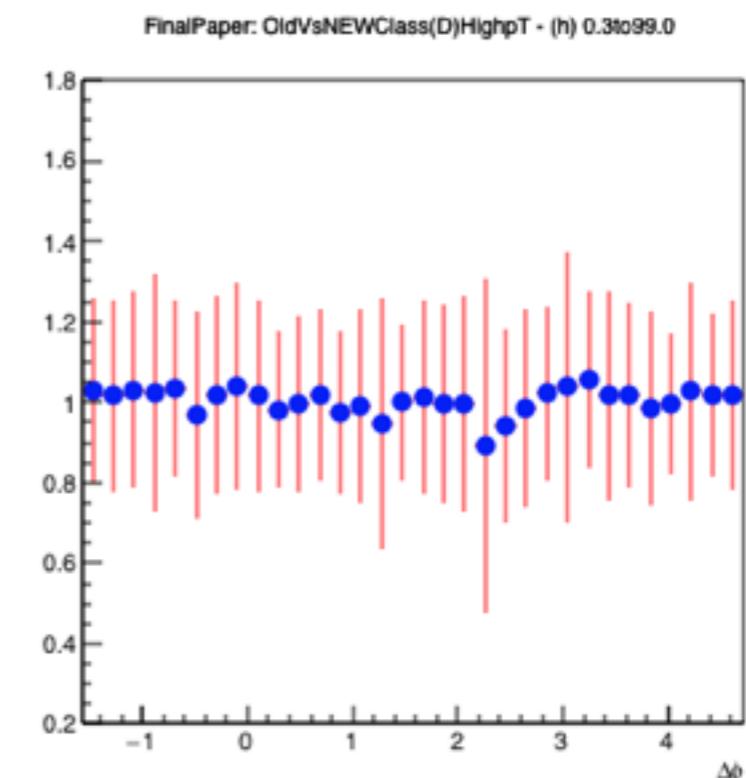
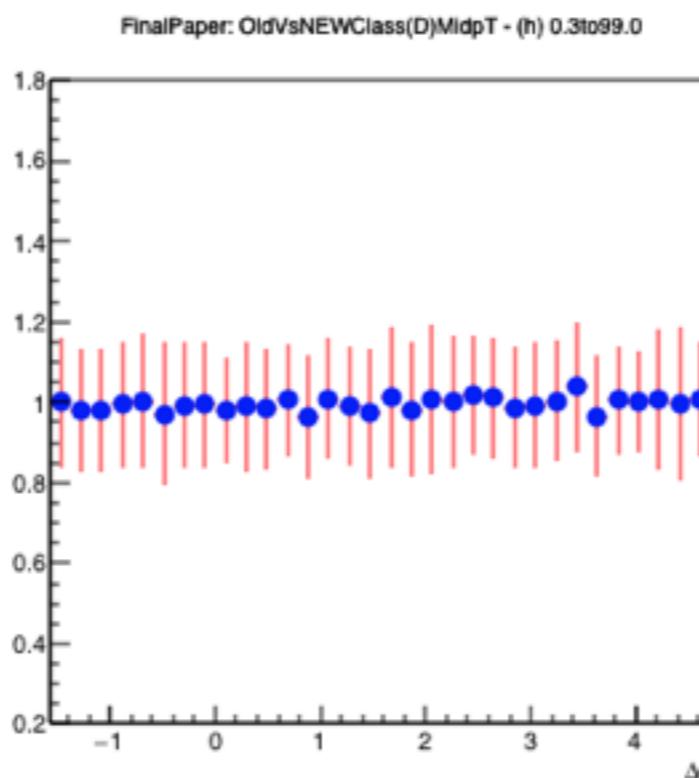
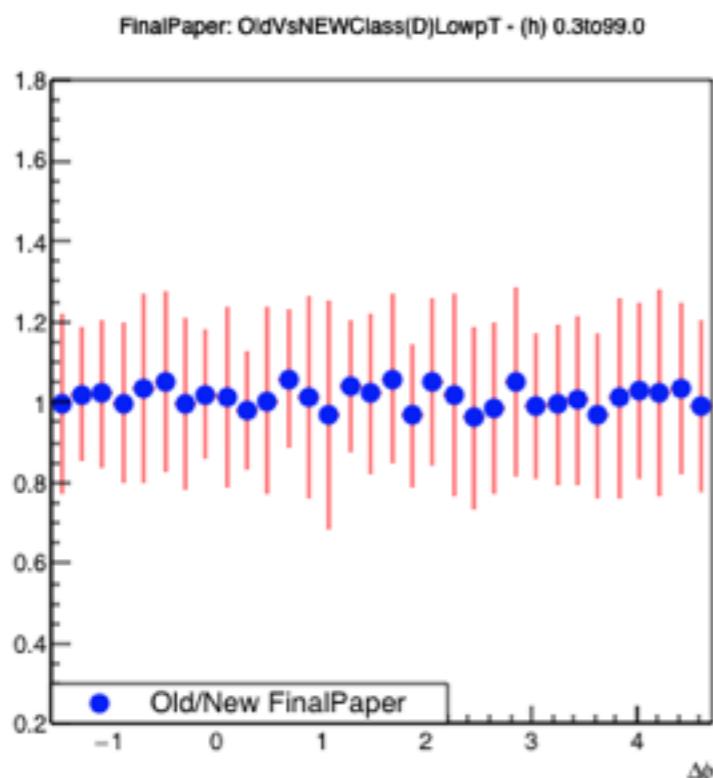
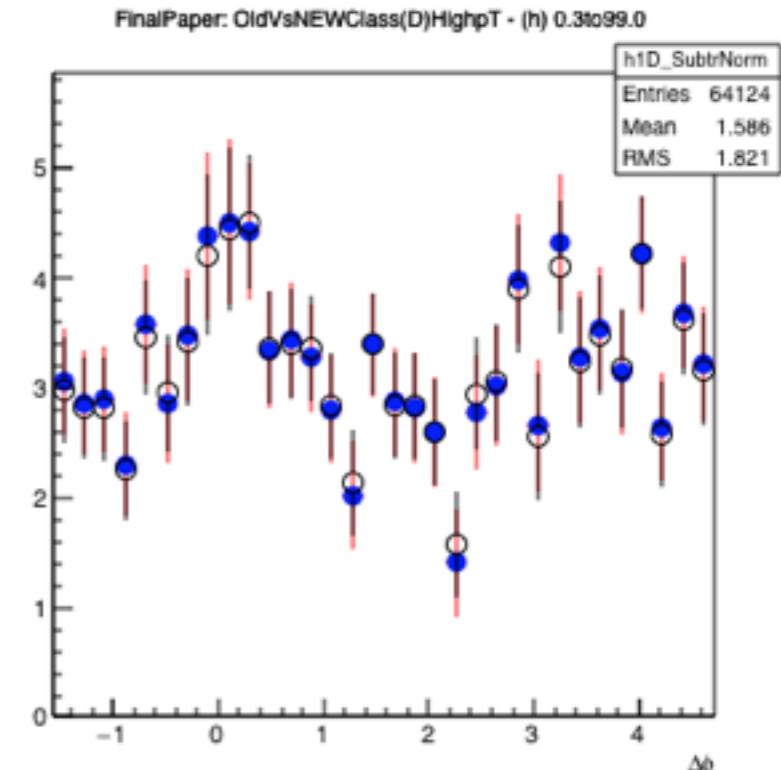


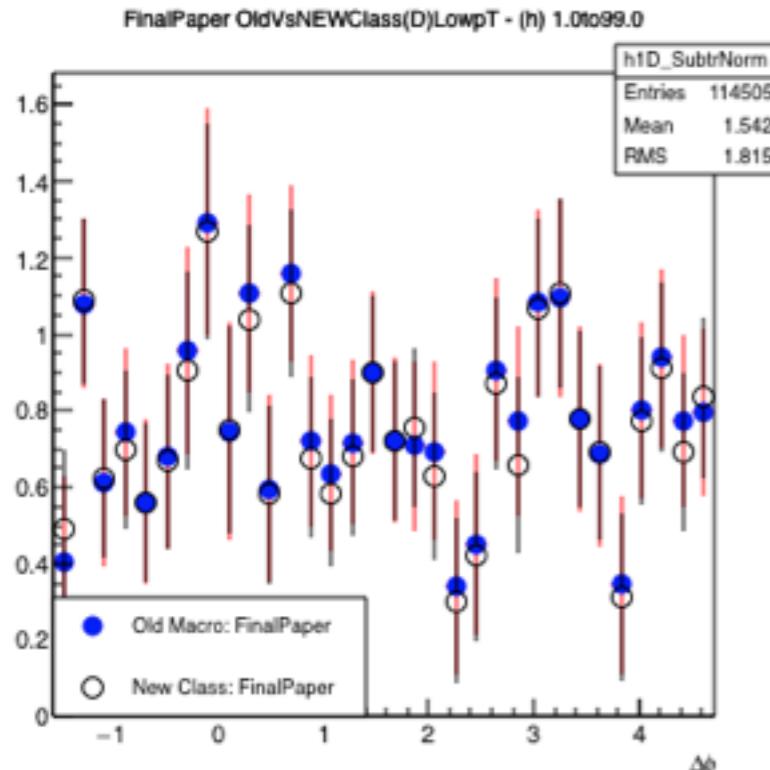
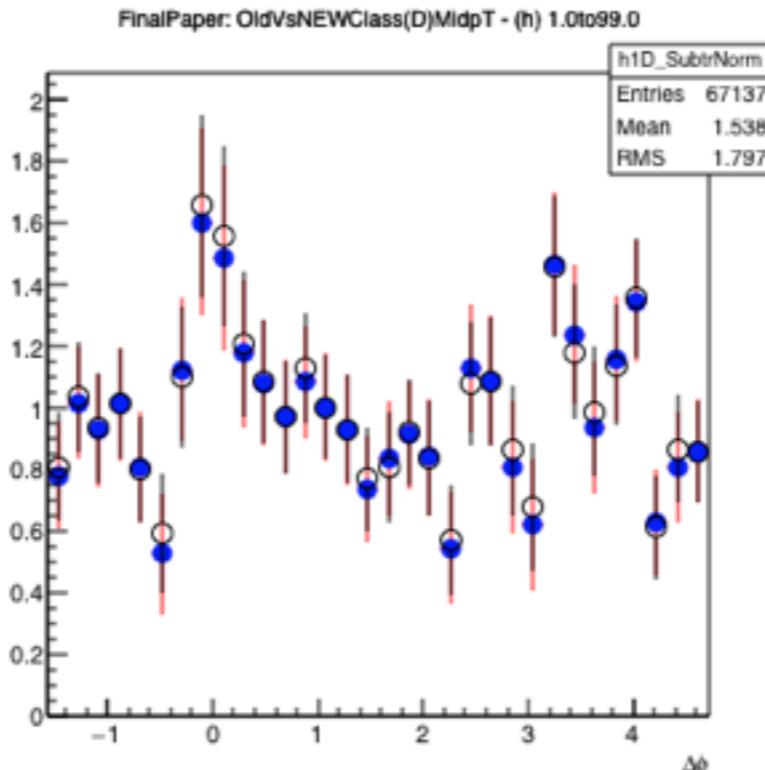
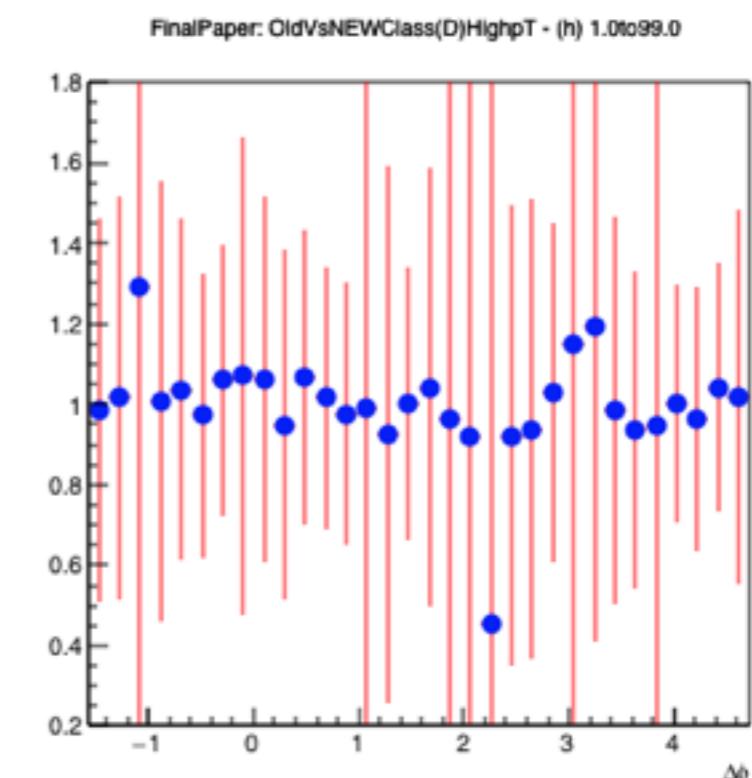
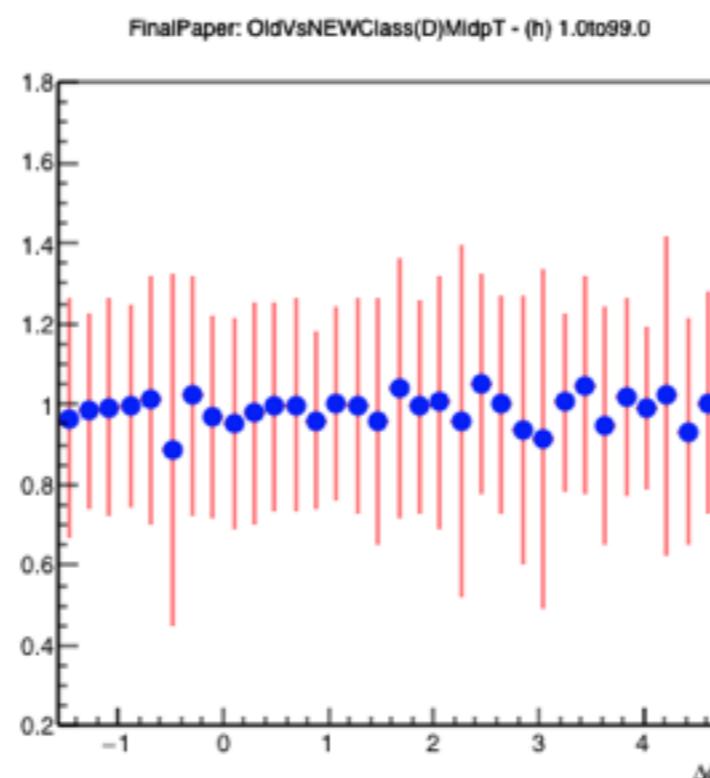
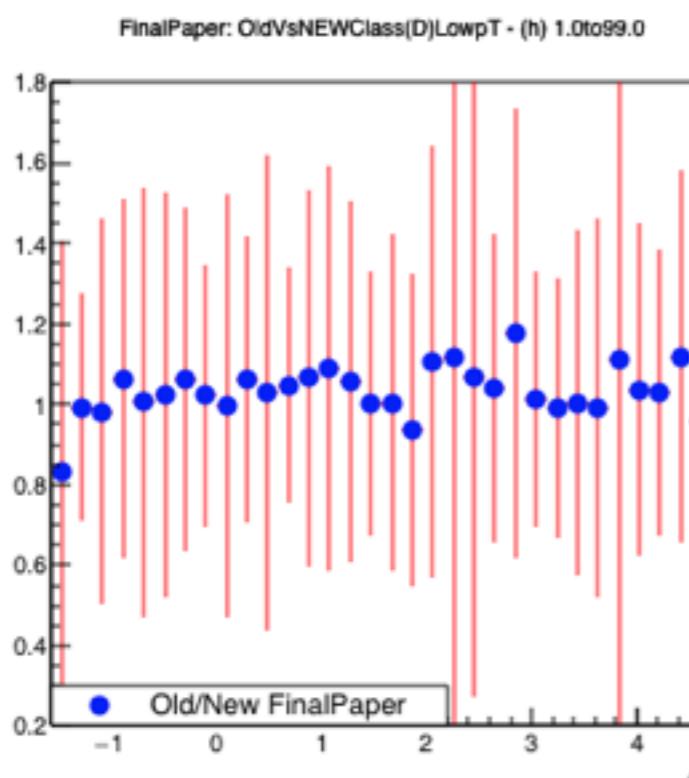
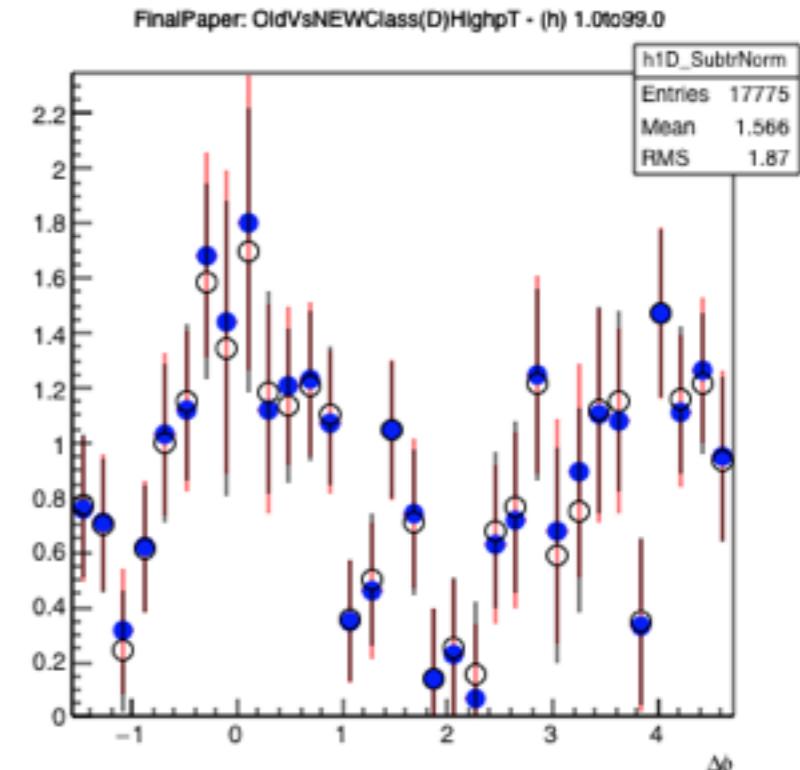
FinalPaper: OldVsNEWClass(D)MidpT - (h) 0.3to1.0



FinalPaper: OldVsNEWClass(D)HighpT - (h) 0.3to1.0



Low p_T (3-5 GeV/c)Mid p_T (5-8 GeV/c)High p_T (8-16 GeV/c)

Low p_T (3-5 GeV/c)Mid p_T (5-8 GeV/c)High p_T (8-16 GeV/c)

Paper Results (Old result file (pass2) : ~270M

Merged Bin used for correlations
3_5, 5_8 and 8_16

1. 0 - 5 -10% variation in correlations for all different threshold
same old settings. (S(fit), LowBinEdge() Safety)

Paper Results (Old result file (pass2) : ~270M Event)

Old Macro: Merged Bin used for correlations

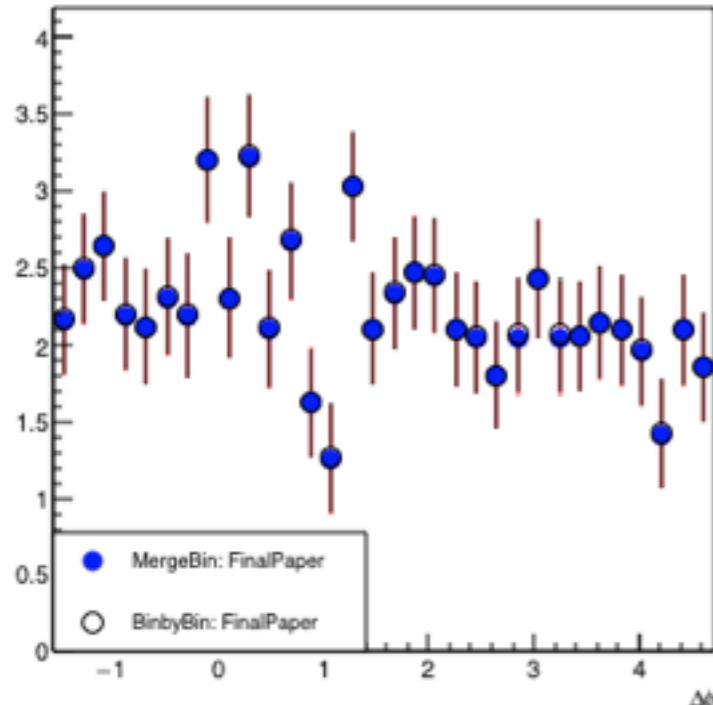
3_5, 5_8 and 8_16

Old Macro: Bin by Bin used for correlations

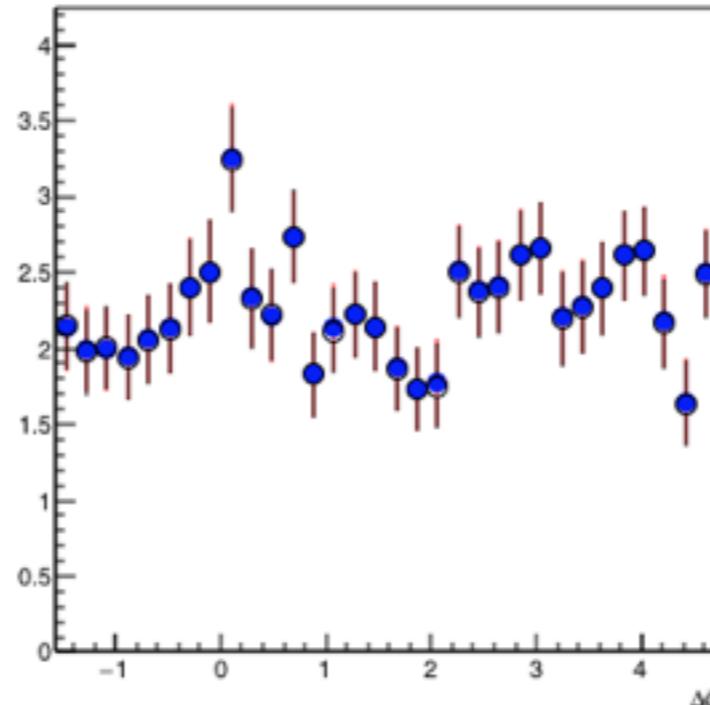
3_4 + 4-5 | 5_6 + 6_7 + 7_8 | 8_16

Low p_T (3-5 GeV/c)

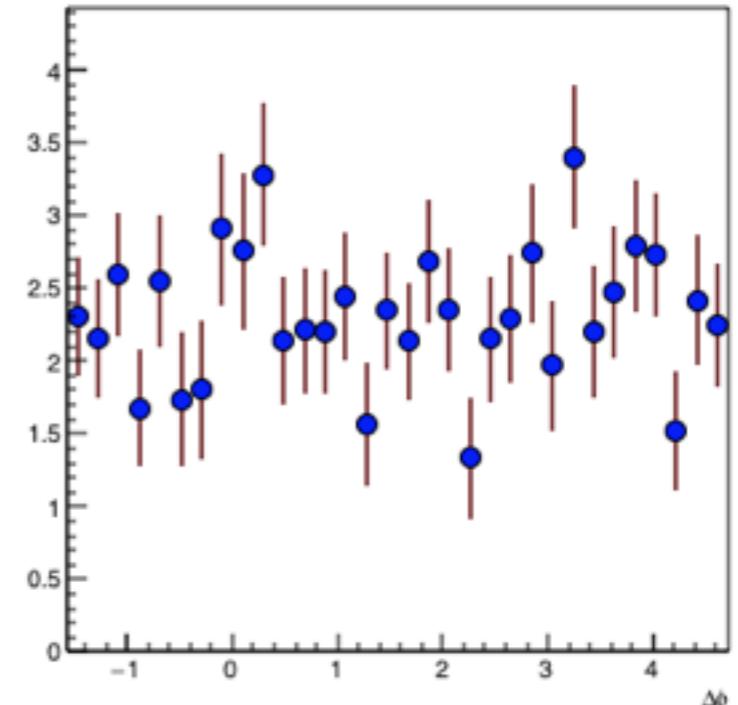
FinalPaper OldB2BBin(D)LowpT - (h) 0.3to1.0

Mid p_T (5-8 GeV/c)

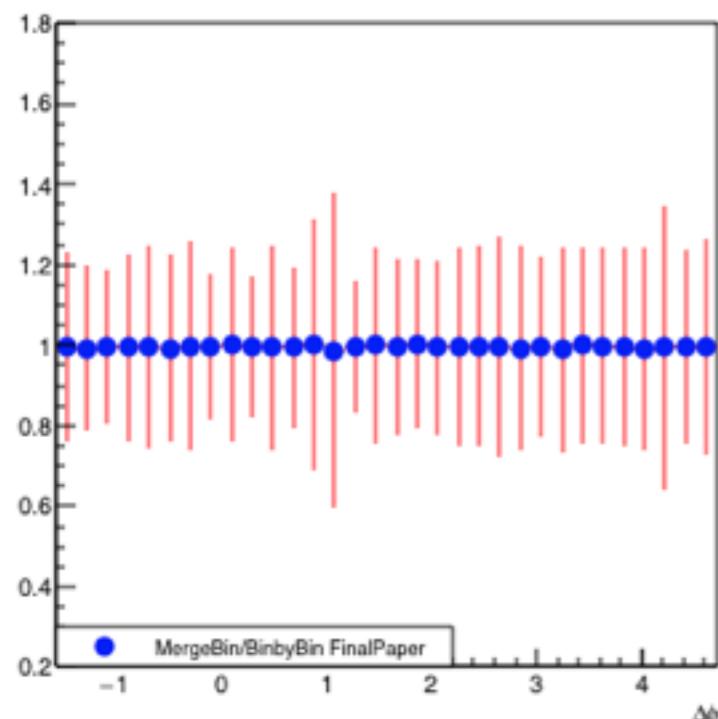
FinalPaper: OldB2BBin(D)MidpT - (h) 0.3to1.0

High p_T (8-16 GeV/c)

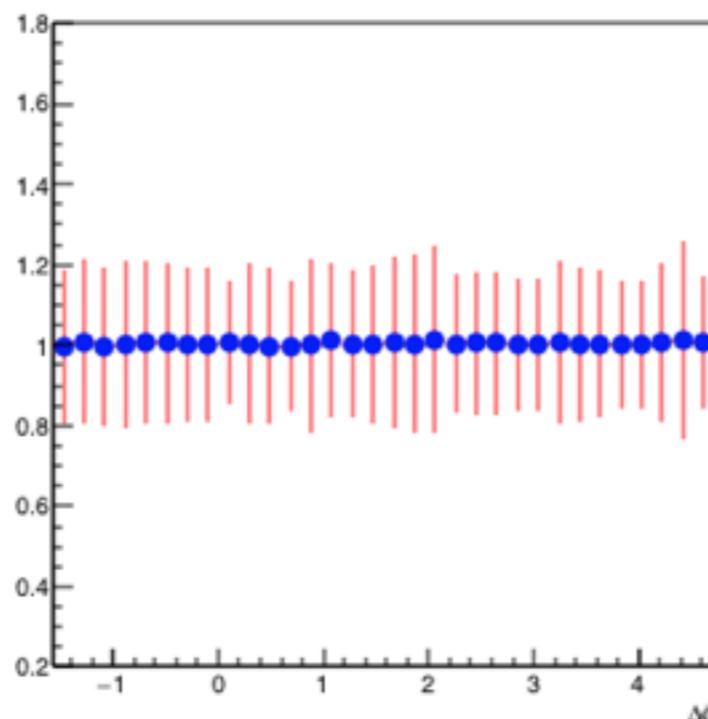
FinalPaper: OldB2BBin(D)HighpT - (h) 0.3to1.0



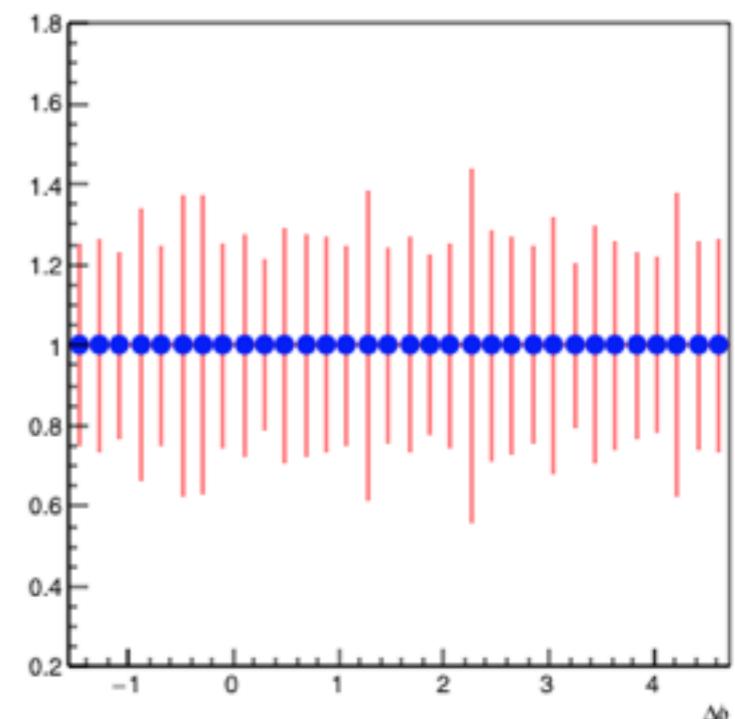
FinalPaper: OldB2BBin(D)LowpT - (h) 0.3to1.0



FinalPaper: OldB2BBin(D)MidpT - (h) 0.3to1.0

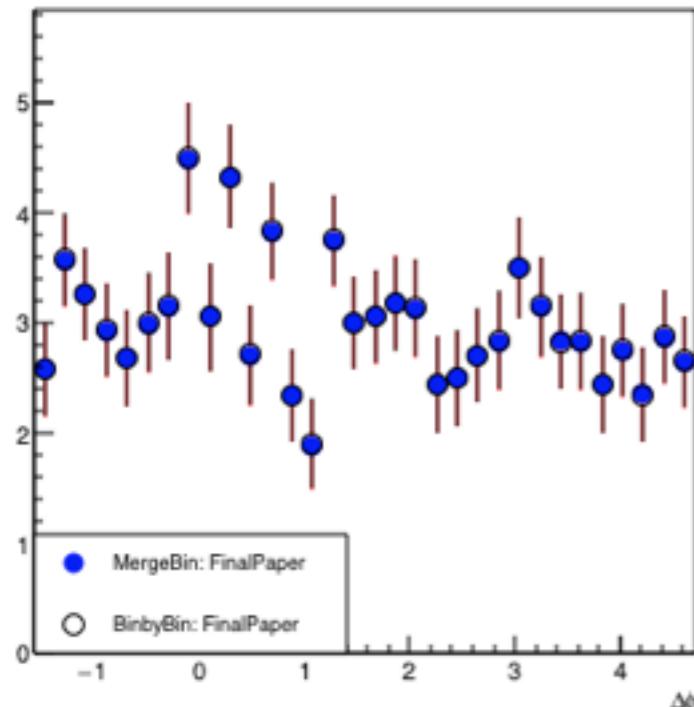


FinalPaper: OldB2BBin(D)HighpT - (h) 0.3to1.0

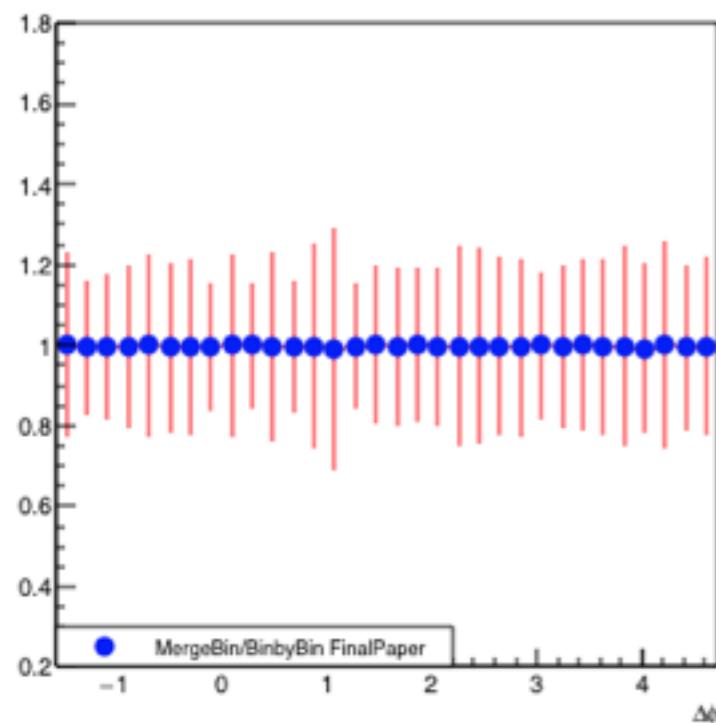


Low p_T (3-5 GeV/c)

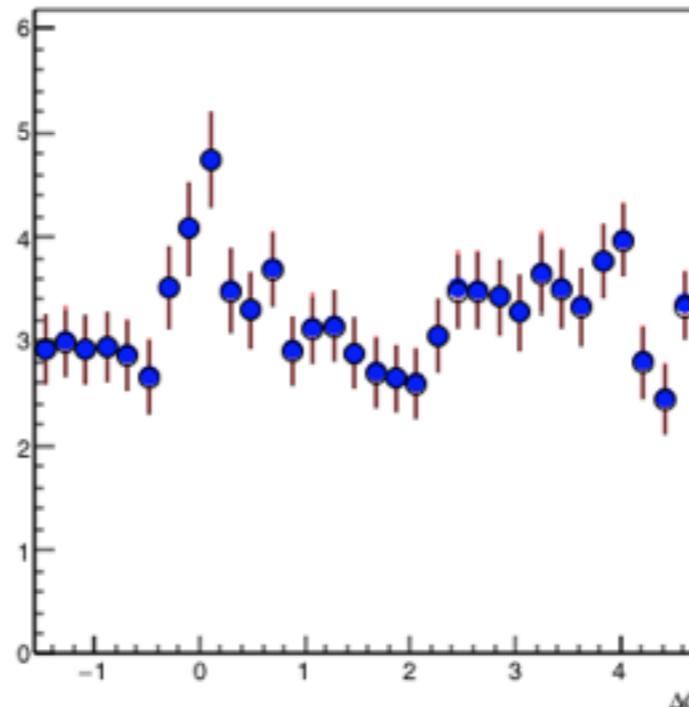
FinalPaper OldB2BBin(D)LowpT - (h) 0.3to99.0



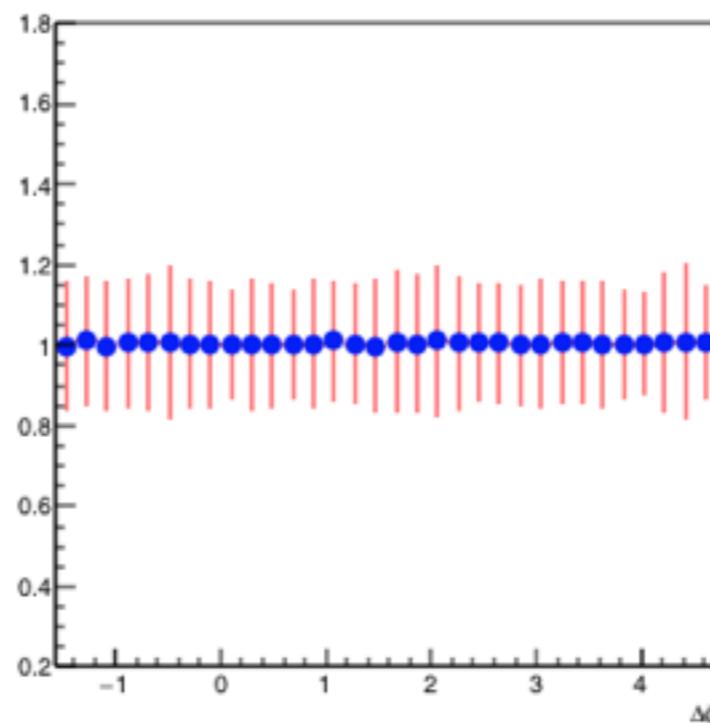
FinalPaper: OldB2BBin(D)LowpT - (h) 0.3to99.0

Mid p_T (5-8 GeV/c)

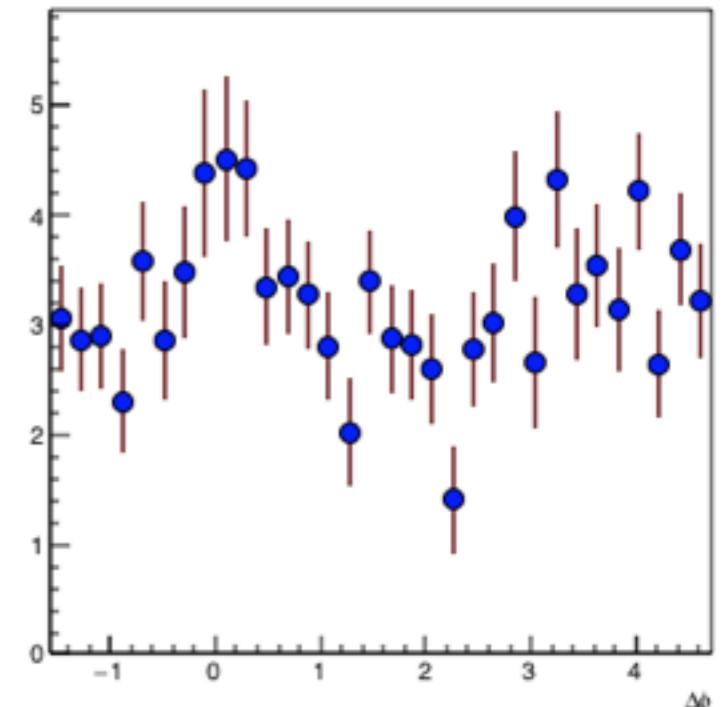
FinalPaper: OldB2BBin(D)MidpT - (h) 0.3to99.0



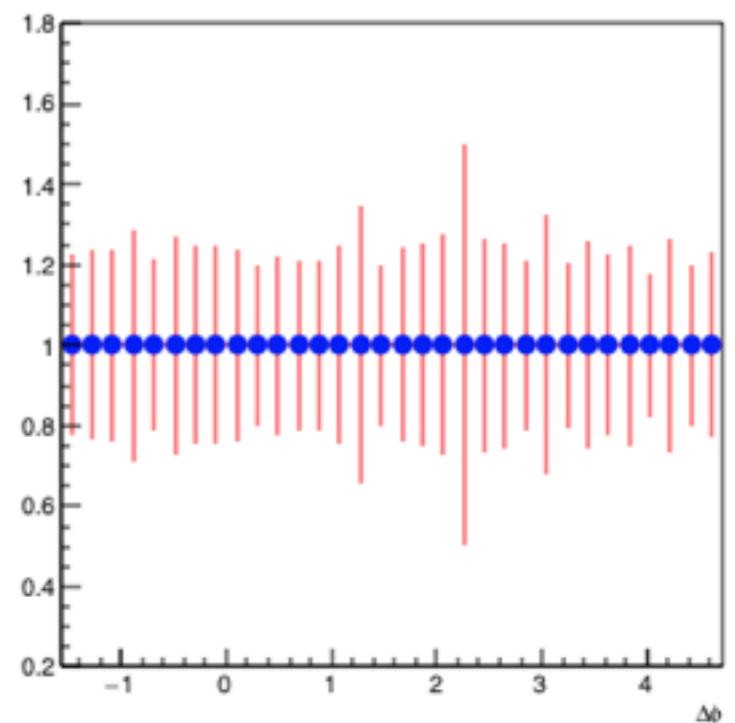
FinalPaper: OldB2BBin(D)MidpT - (h) 0.3to99.0

High p_T (8-16 GeV/c)

FinalPaper: OldB2BBin(D)HighpT - (h) 0.3to99.0

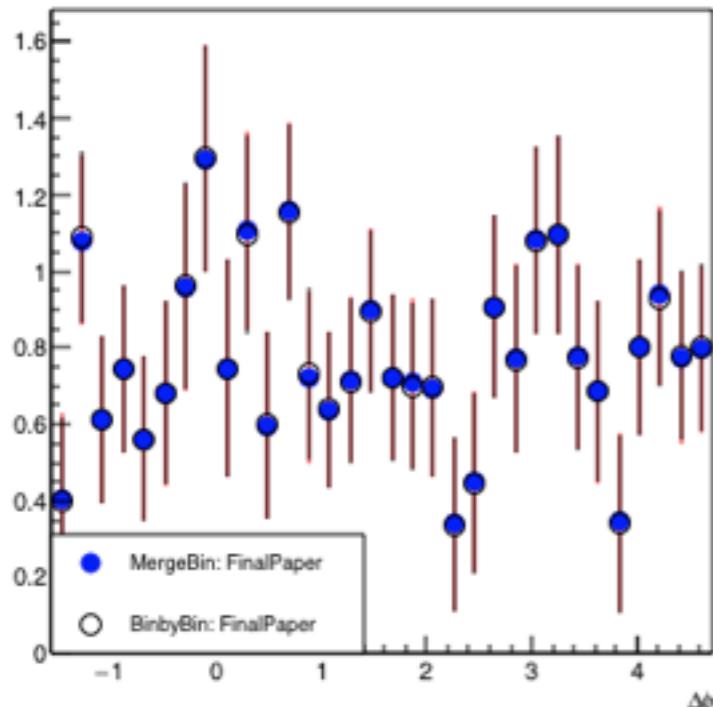


FinalPaper: OldB2BBin(D)HighpT - (h) 0.3to99.0

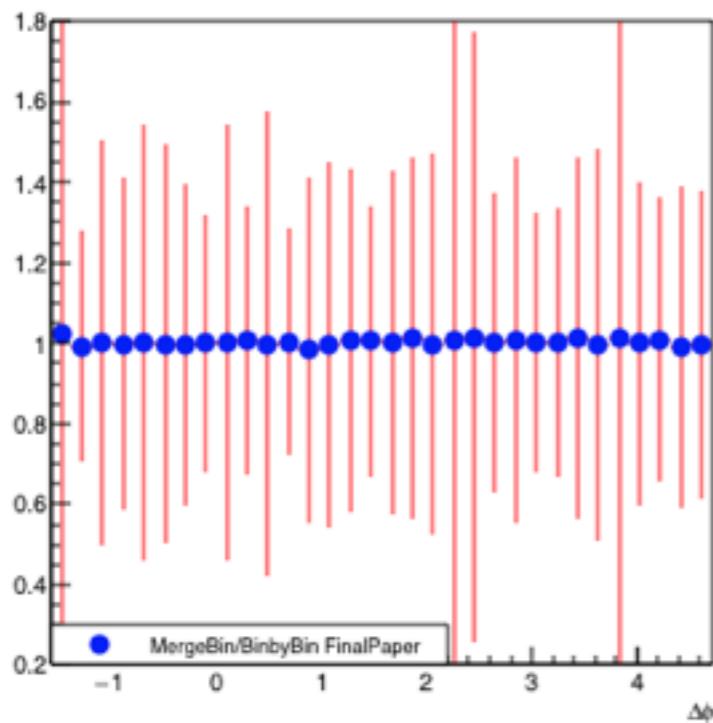


Low p_T (3-5 GeV/c)

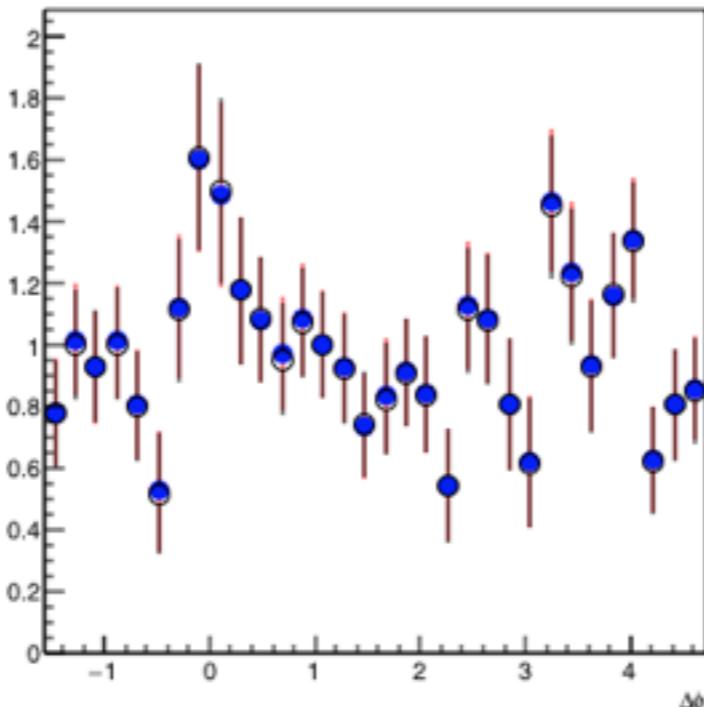
FinalPaper OldB2BBin(D)LowpT - (h) 1.0to99.0



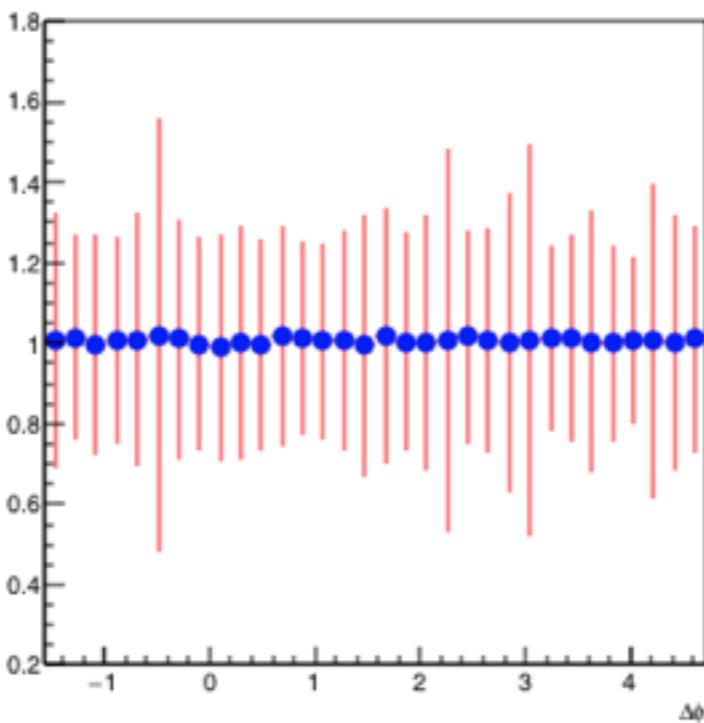
FinalPaper: OldB2BBin(D)LowpT - (h) 1.0to99.0

Mid p_T (5-8 GeV/c)

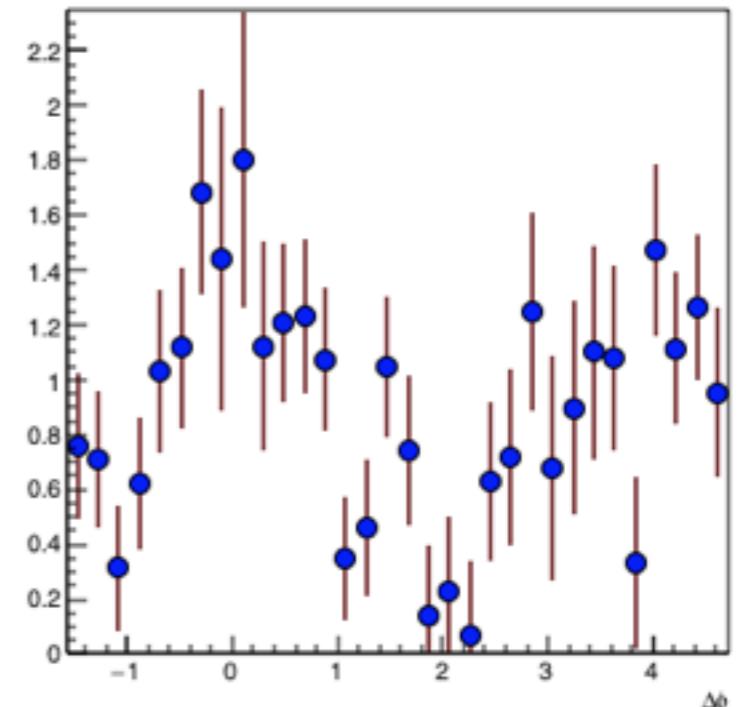
FinalPaper: OldB2BBin(D)MidpT - (h) 1.0to99.0



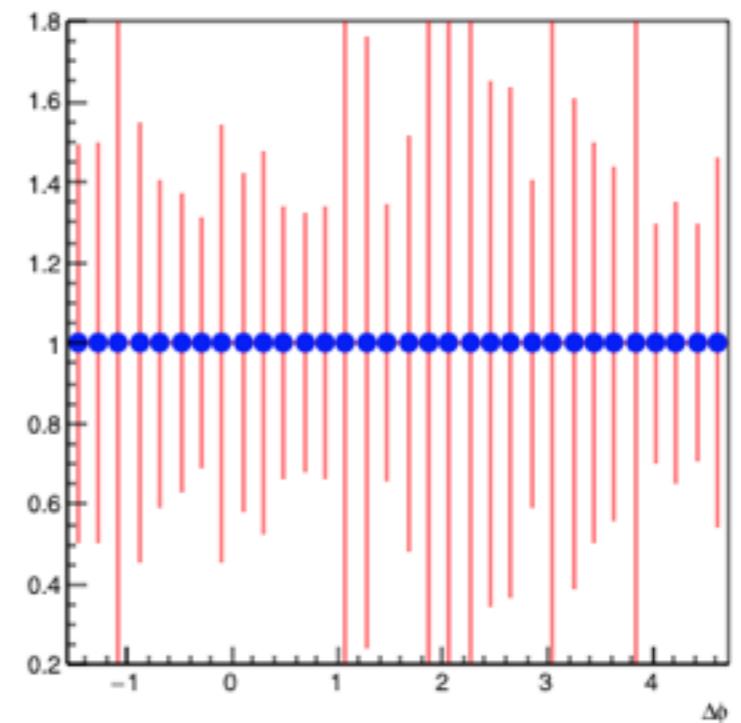
FinalPaper: OldB2BBin(D)MidpT - (h) 1.0to99.0

High p_T (8-16 GeV/c)

FinalPaper: OldB2BBin(D)HighpT - (h) 1.0to99.0



FinalPaper: OldB2BBin(D)HighpT - (h) 1.0to99.0



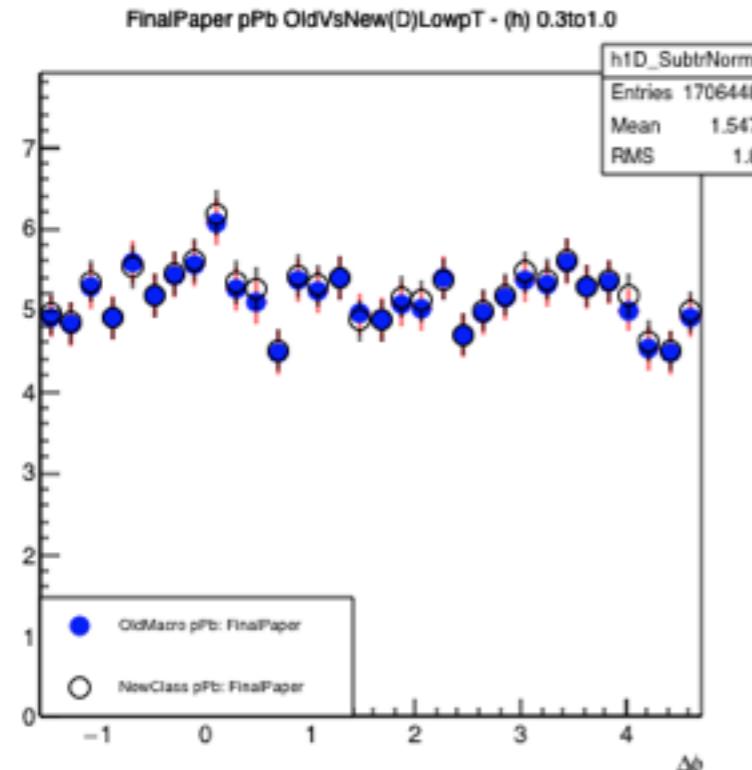
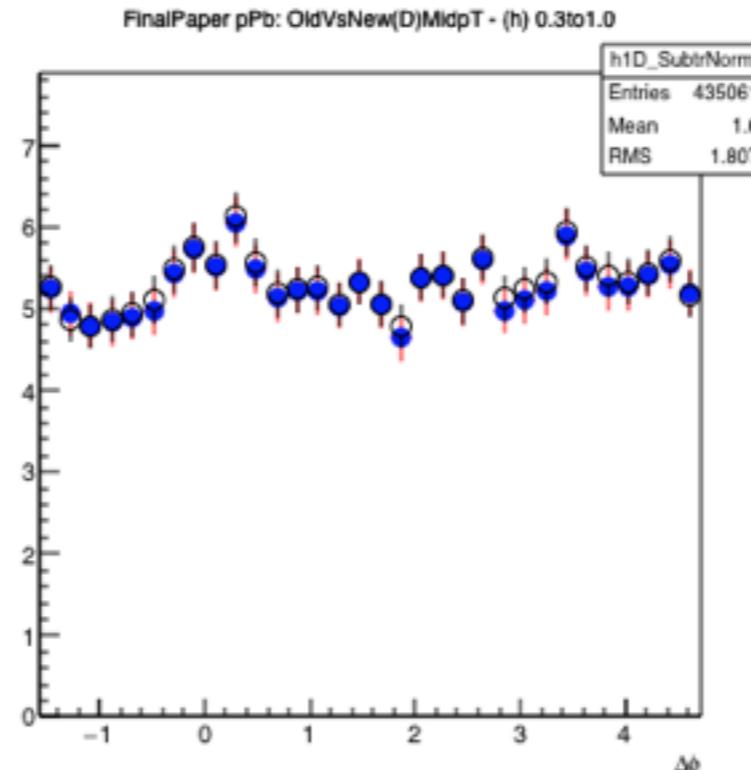
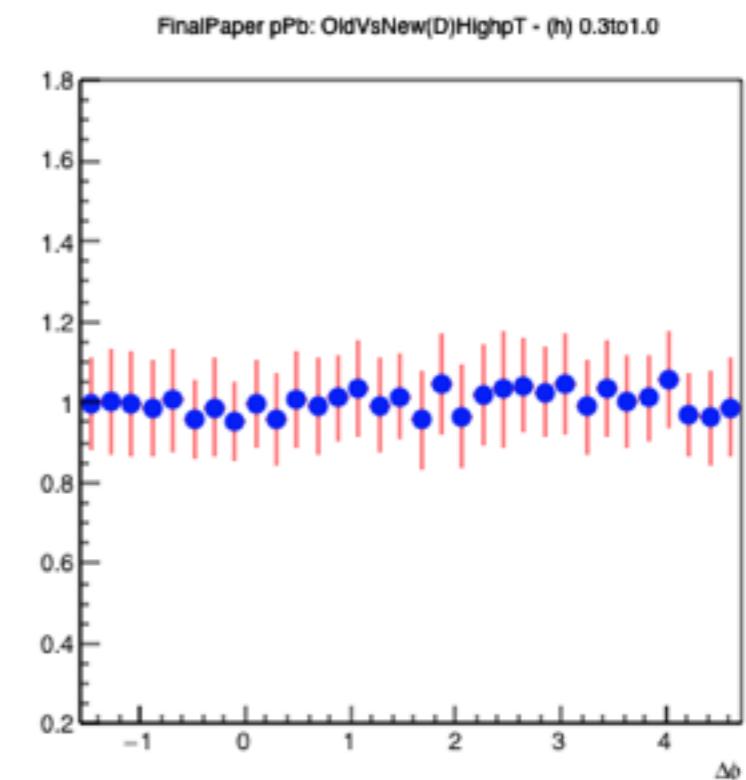
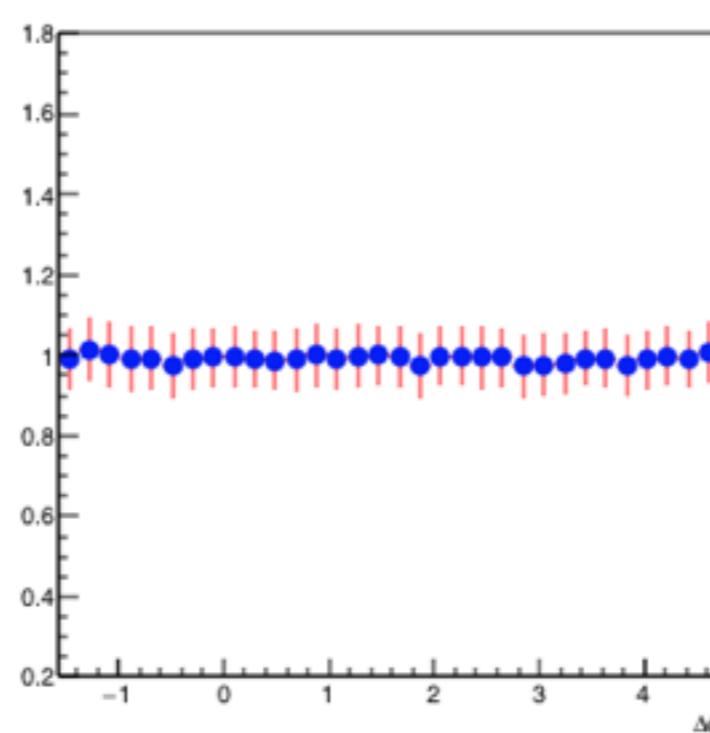
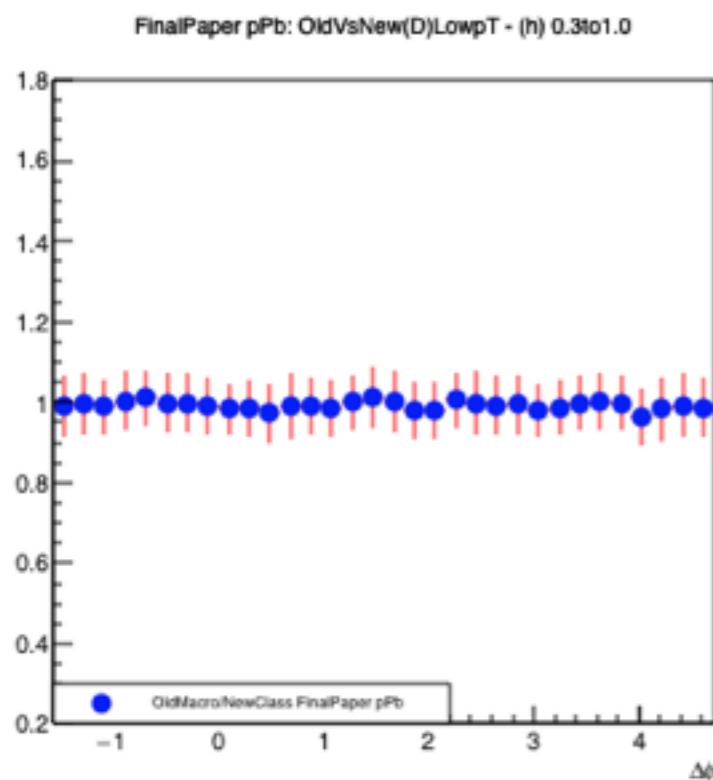
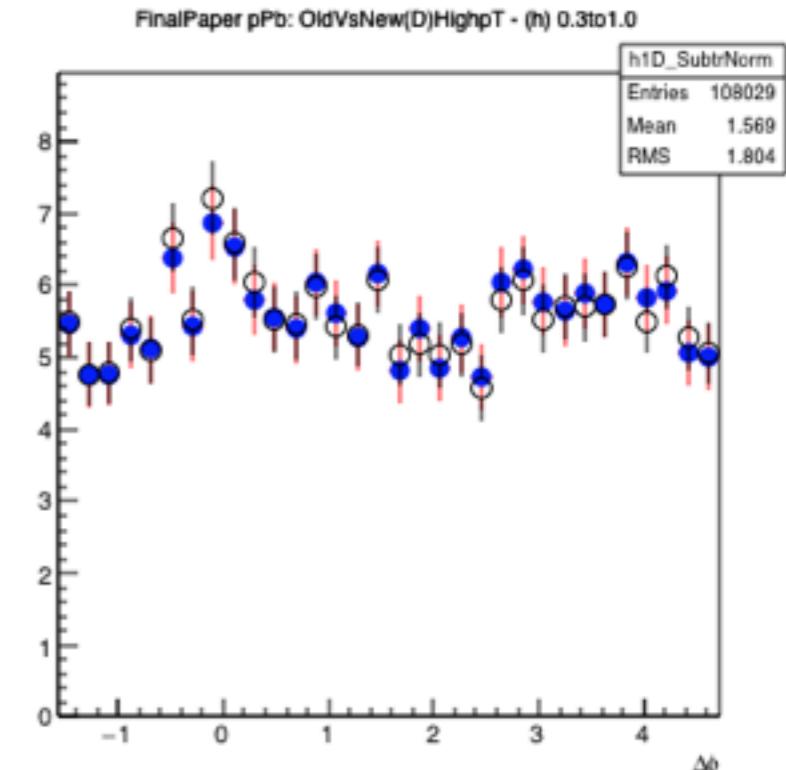
**Paper Results (Old result file (pass2) : ~270M
Merged Bin Vs Bin by Bin used for correlations
3_5, 5_8 and 8_16**

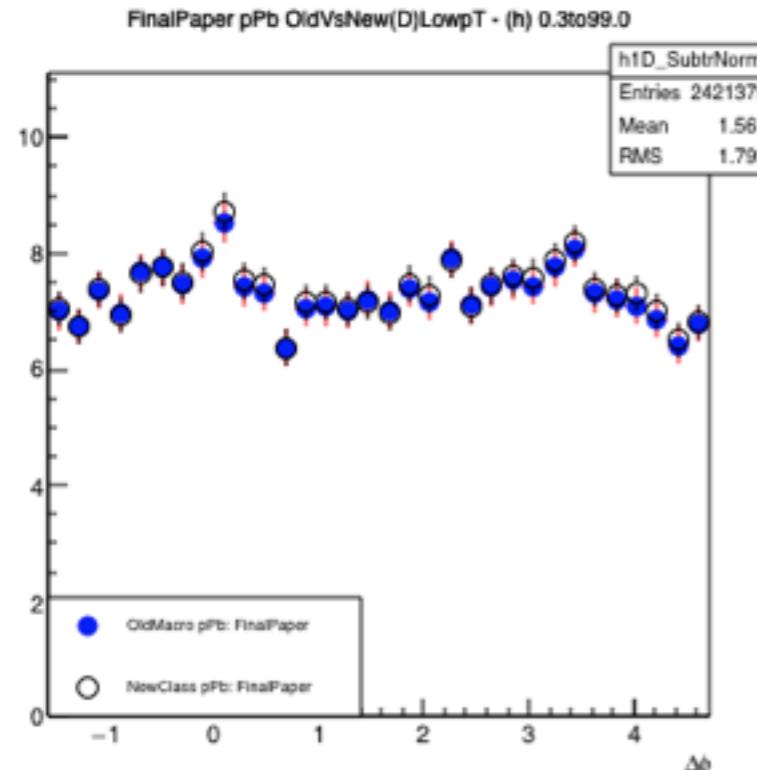
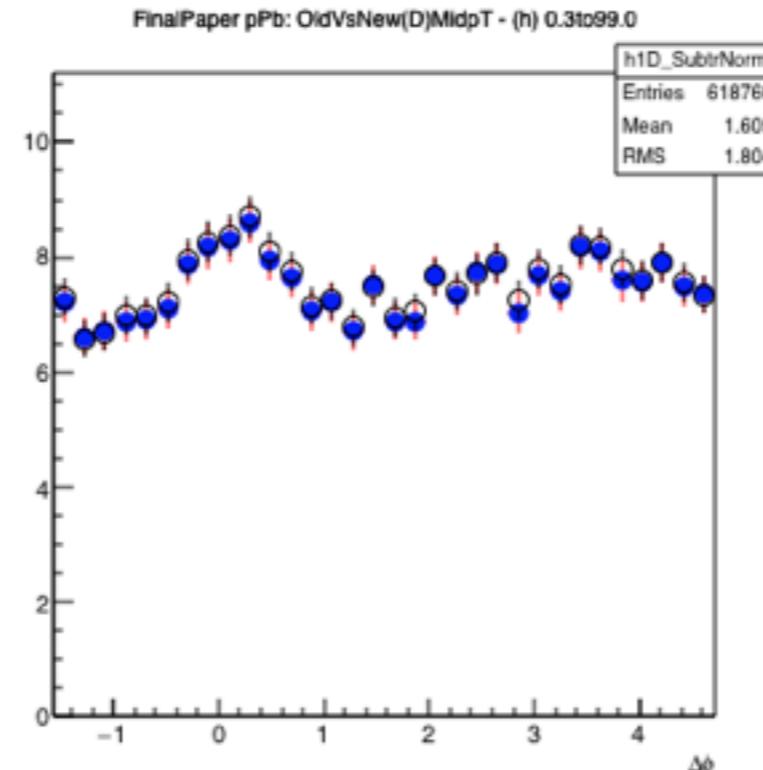
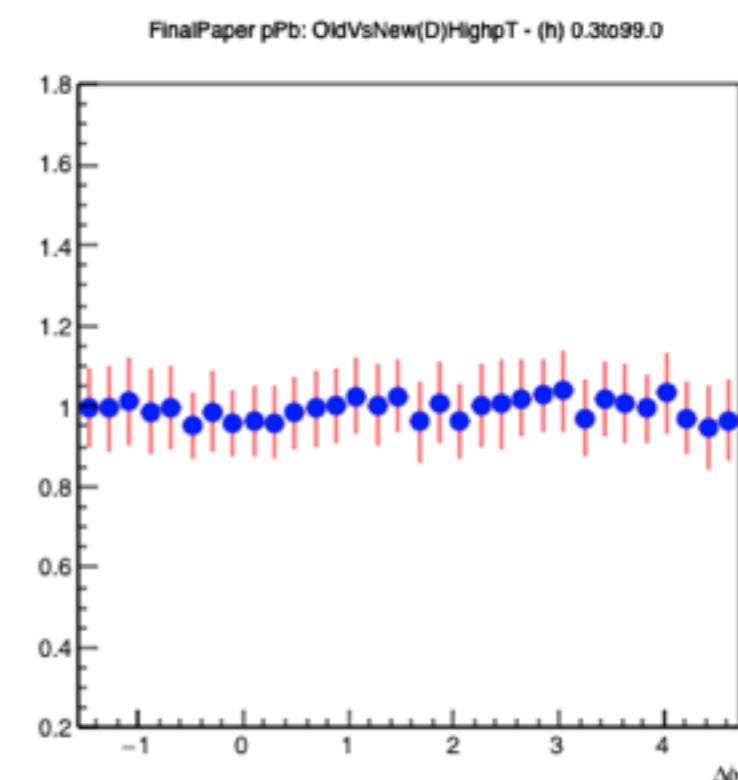
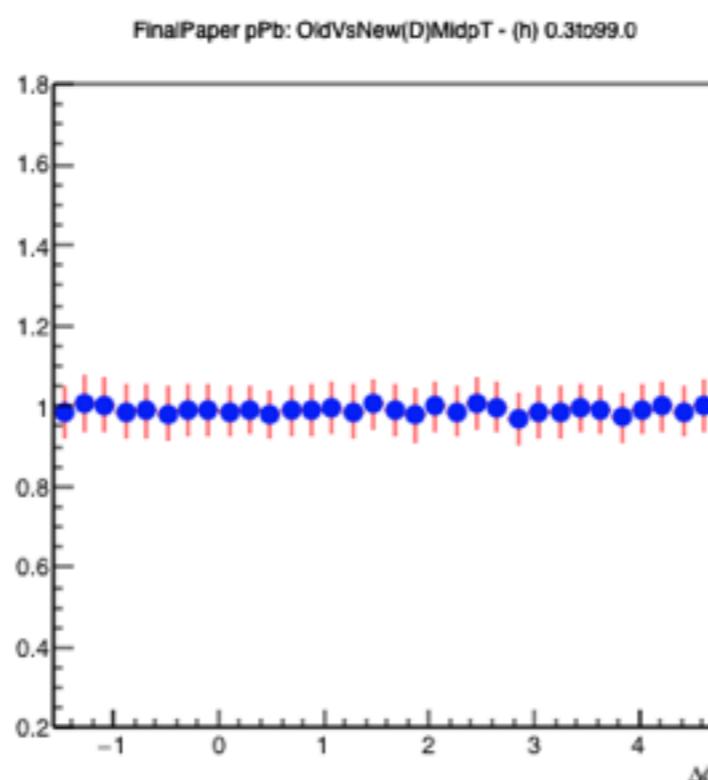
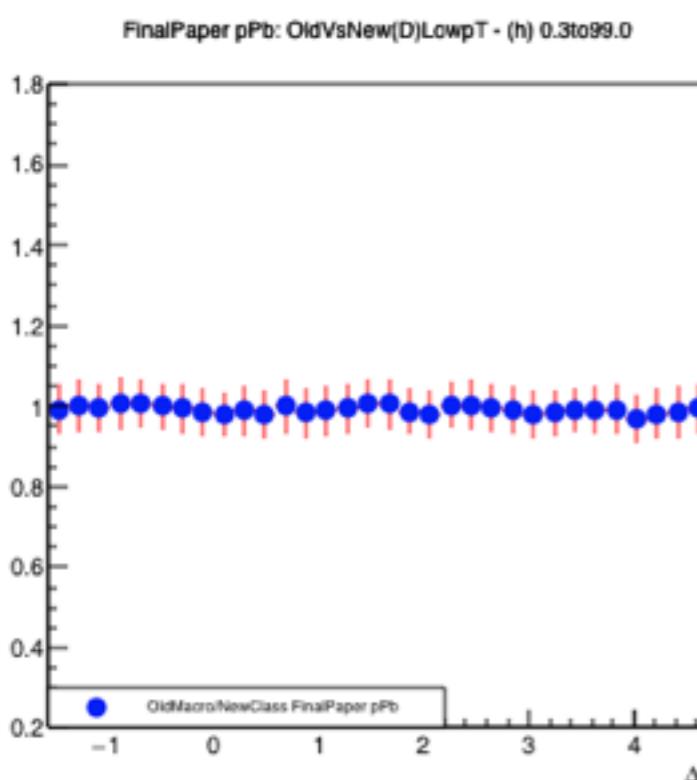
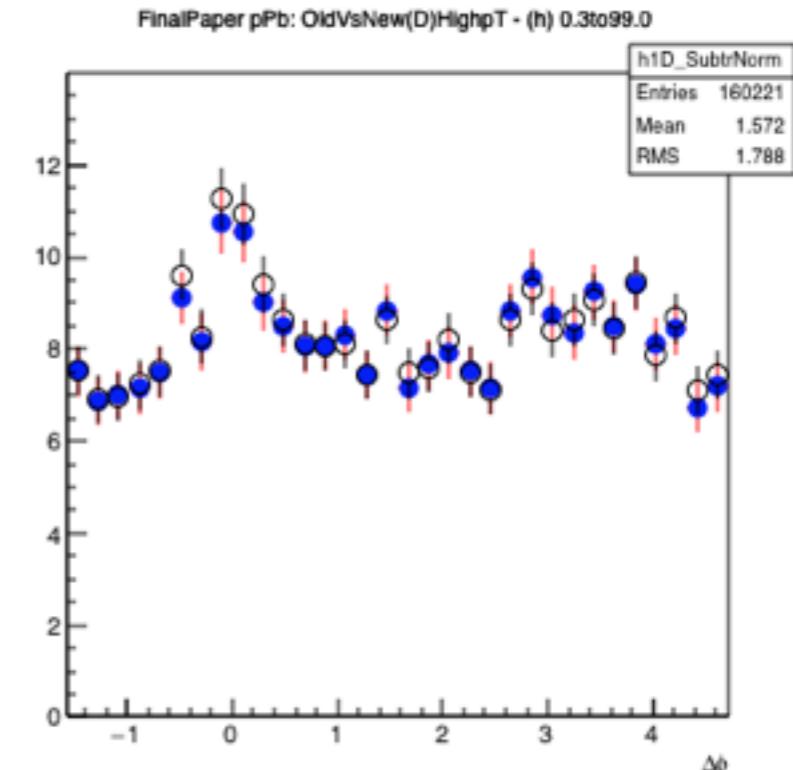
0 - 1% Variation in correlations for all different threshold (old macro)

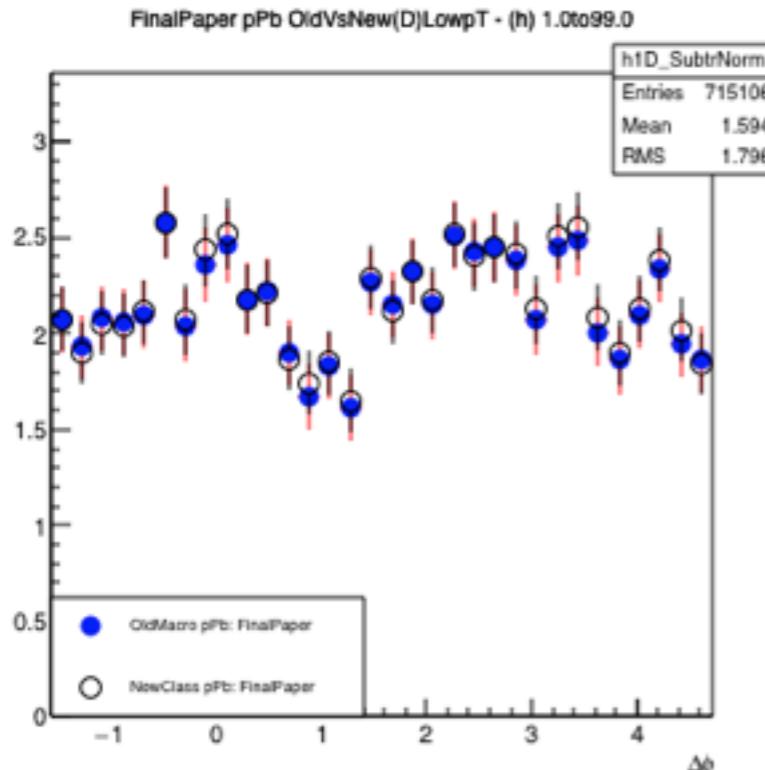
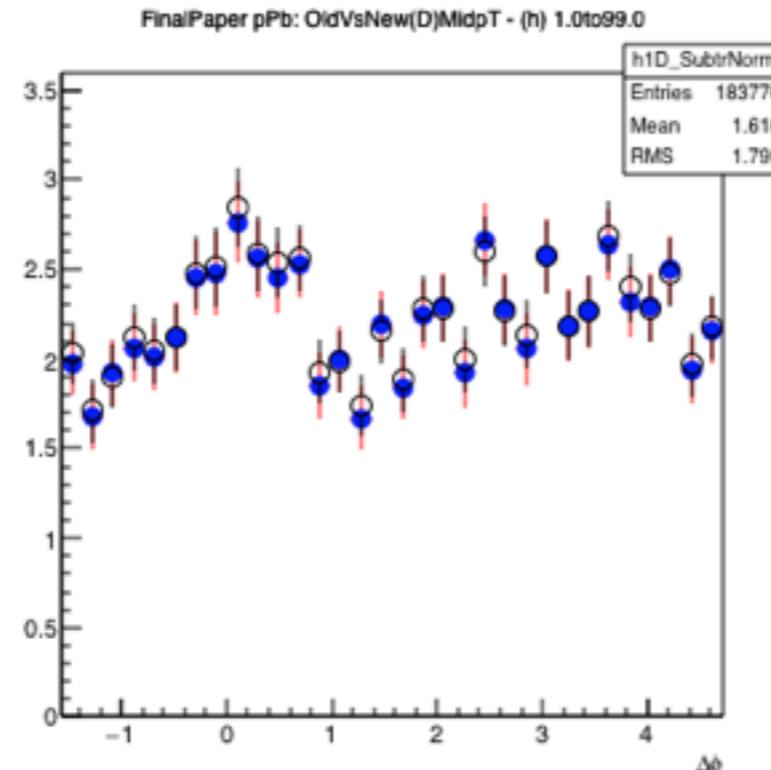
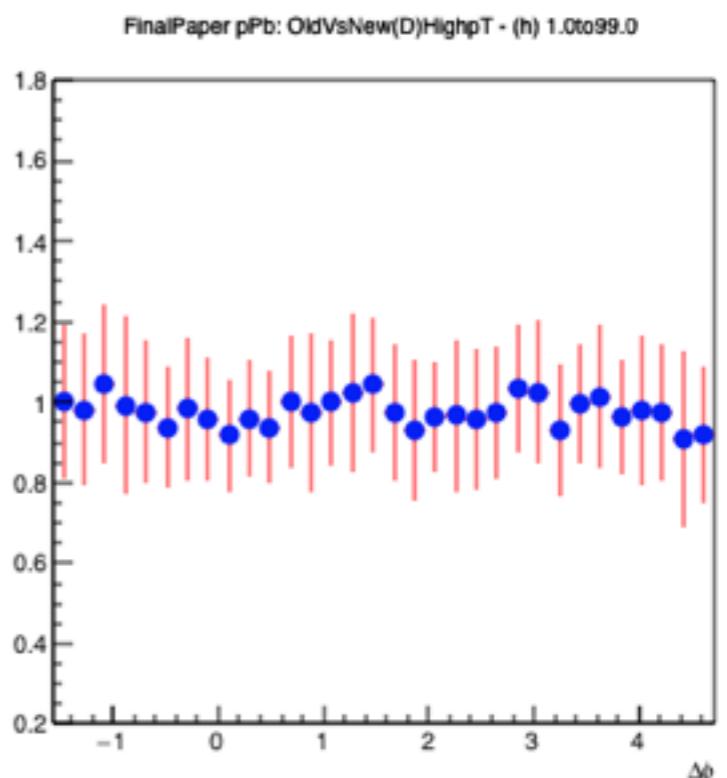
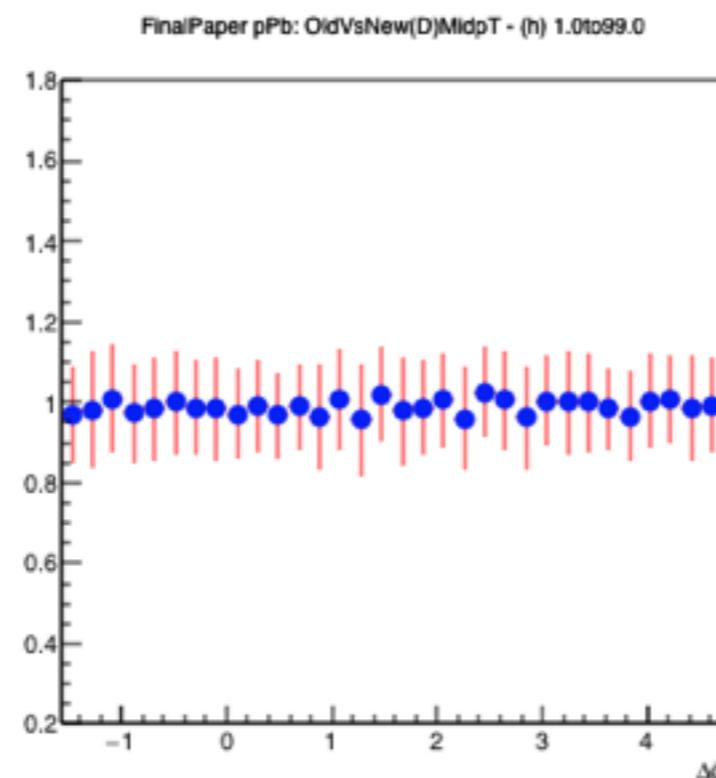
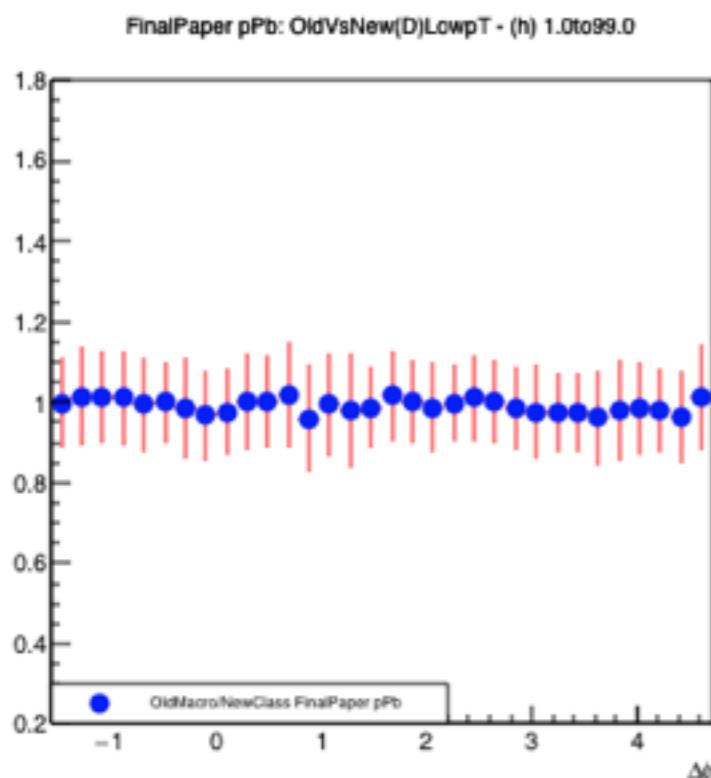
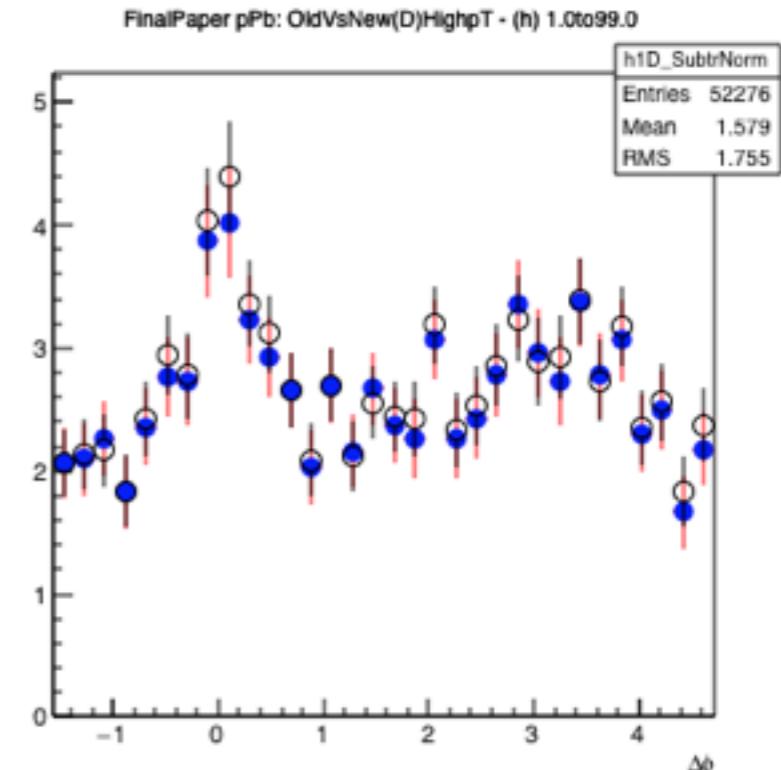
Paper Results: Old result file (p-Pb)

New Class Vs Old Macro: Merged used for correlations

3_5, 5_8 and 8_16 (8-10 + 10-16)

Low p_T (3-5 GeV/c)Mid p_T (5-8 GeV/c)High p_T (8-16 GeV/c)

Low p_T (3-5 GeV/c)Mid p_T (5-8 GeV/c)High p_T (8-16 GeV/c)

Low p_T (3-5 GeV/c)Mid p_T (5-8 GeV/c)High p_T (8-16 GeV/c)

Paper Results: Old result file (p-Pb)

Merged Bin Vs Bin by Bin used for correlations

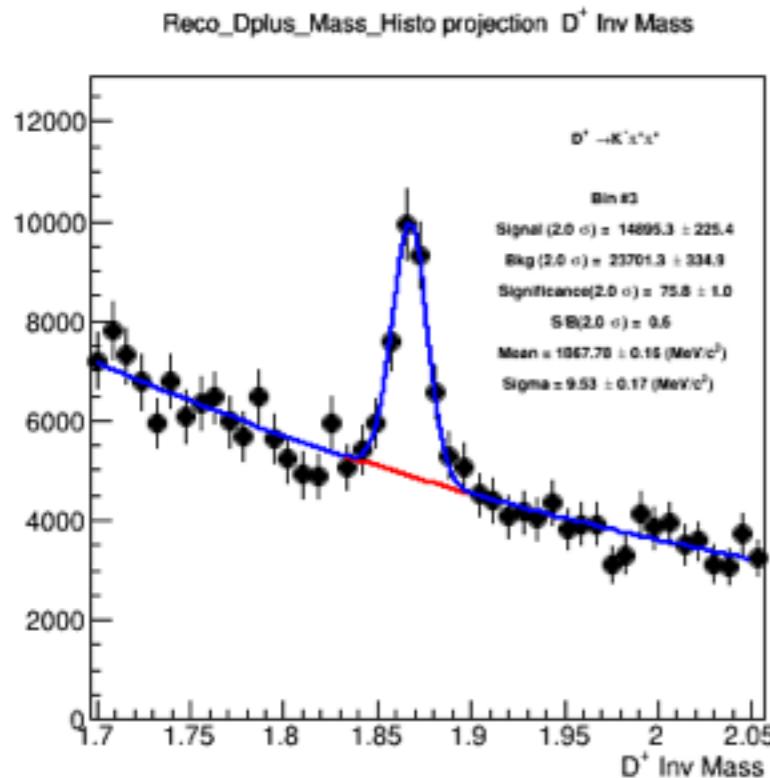
3_5, 5_8 and 8_16

1. LowPt and Mid pT variation 2-3%
2. Mid pT : 0-7% but done different way (**8-16** Vs **8-10+10-16**)

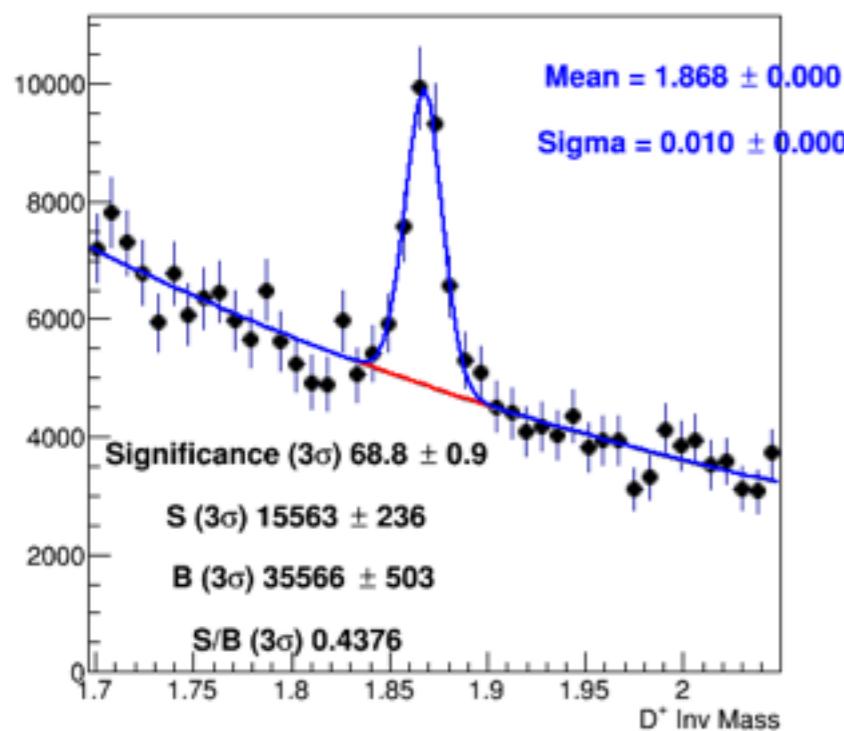
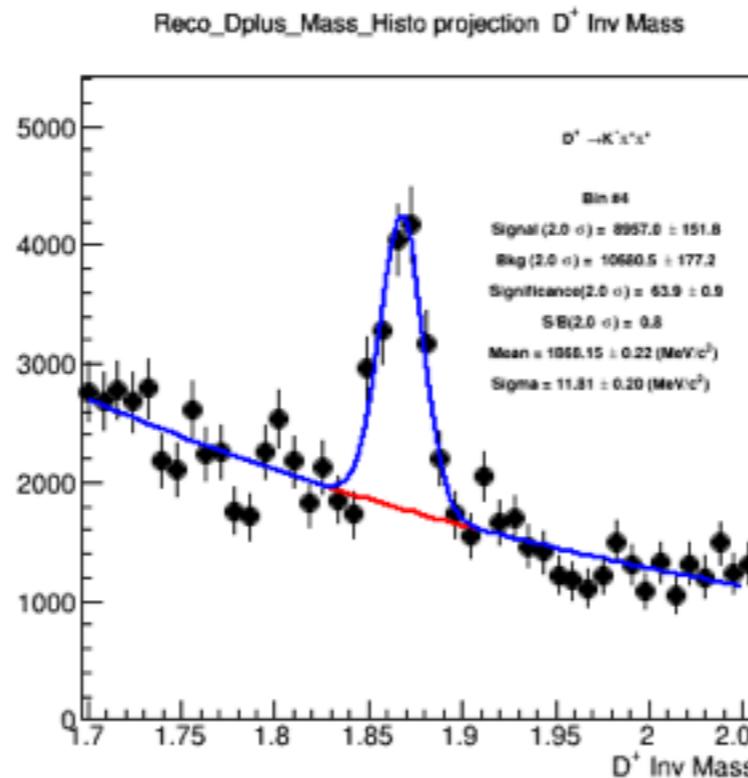
New results extraction macro is producing similar results for D⁺ in pp and pPb both (Integrated and Pool by Pool both way). So for D⁺, new class/code can be use instead of old macro.

Detailed Paper Results: Old result file (pp)

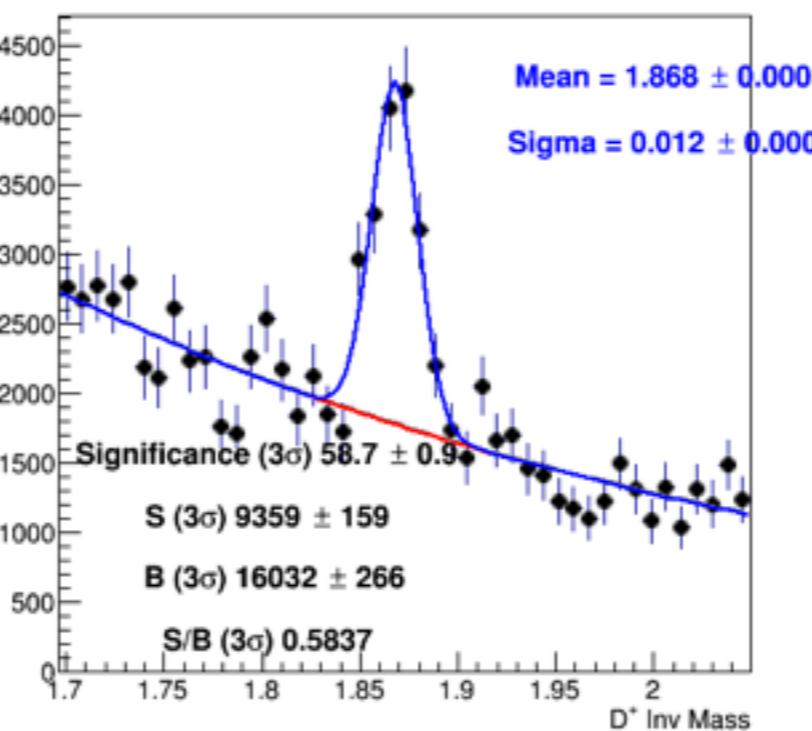
Detailed plots from new macro (same as obtain from old macro)

Low p_T (3-4 GeV/c)

DplusMass_pT_bin3

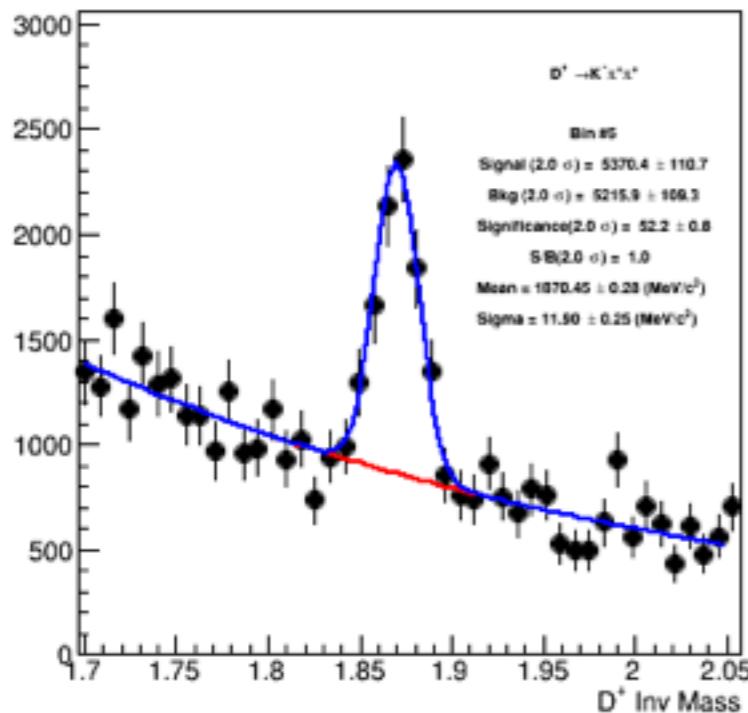
Mid p_T (4-5 GeV/c)

DplusMass_pT_bin4

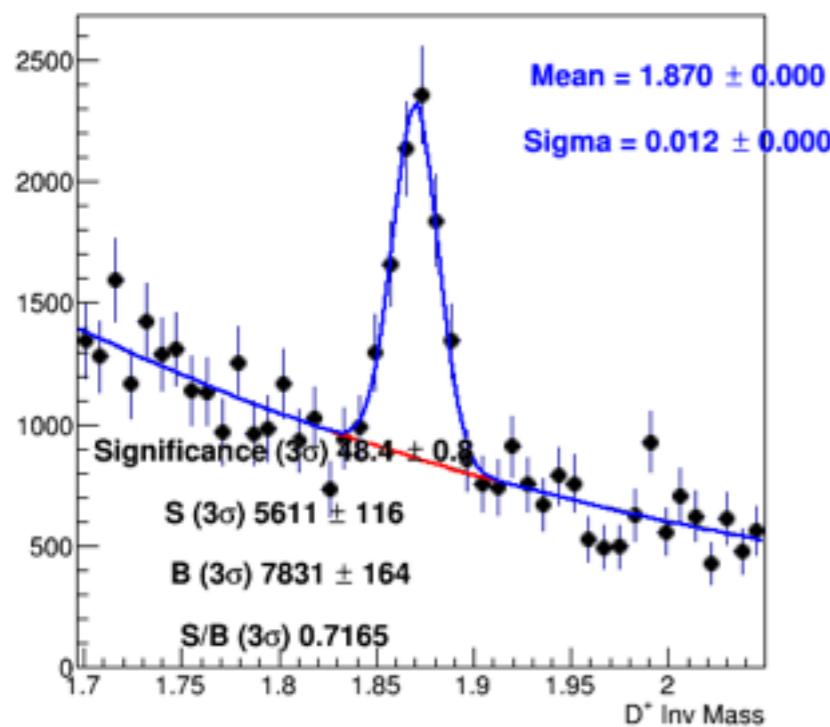
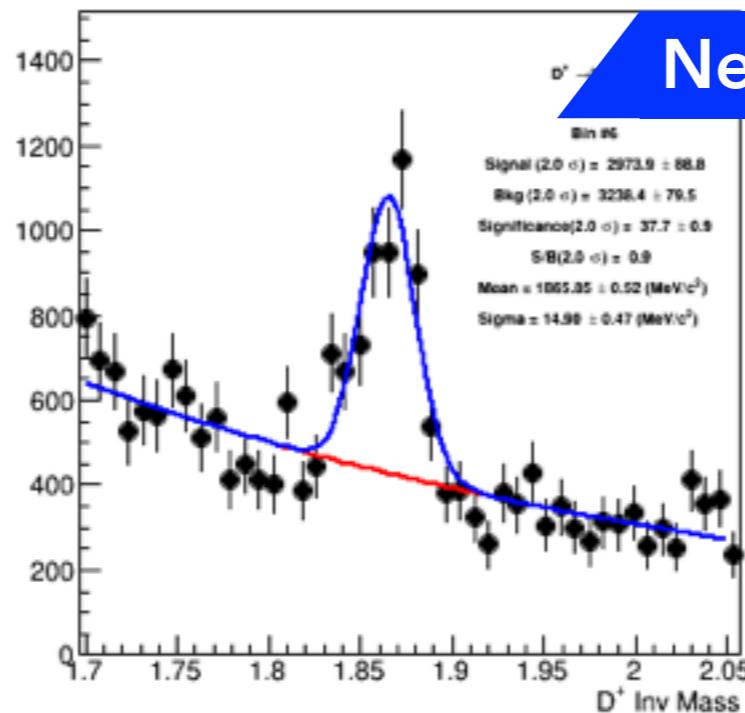


New Macro

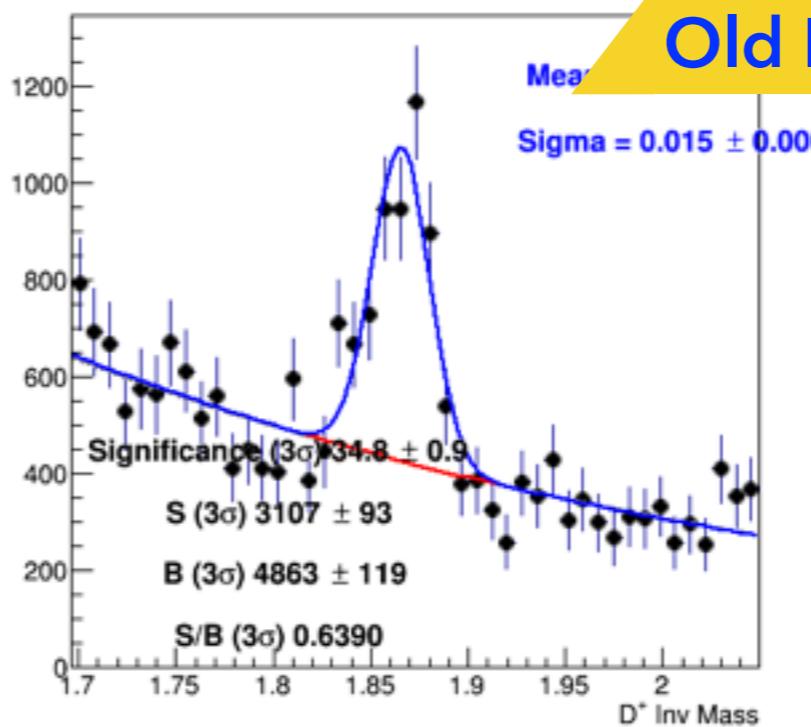
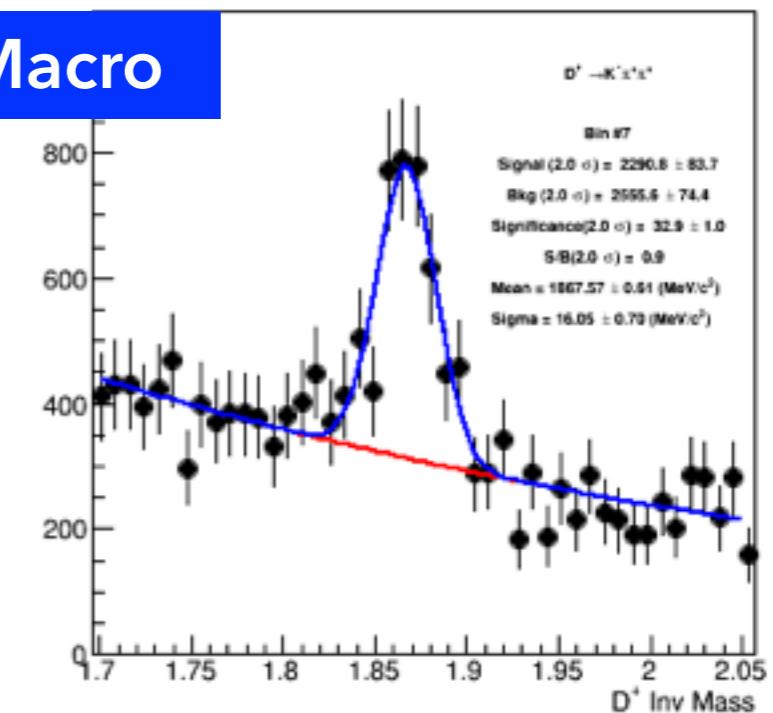
Old Macro

Low p_T (5-6 GeV/c)Reco_Dplus_Mass_Histo projection D⁺ Inv Mass

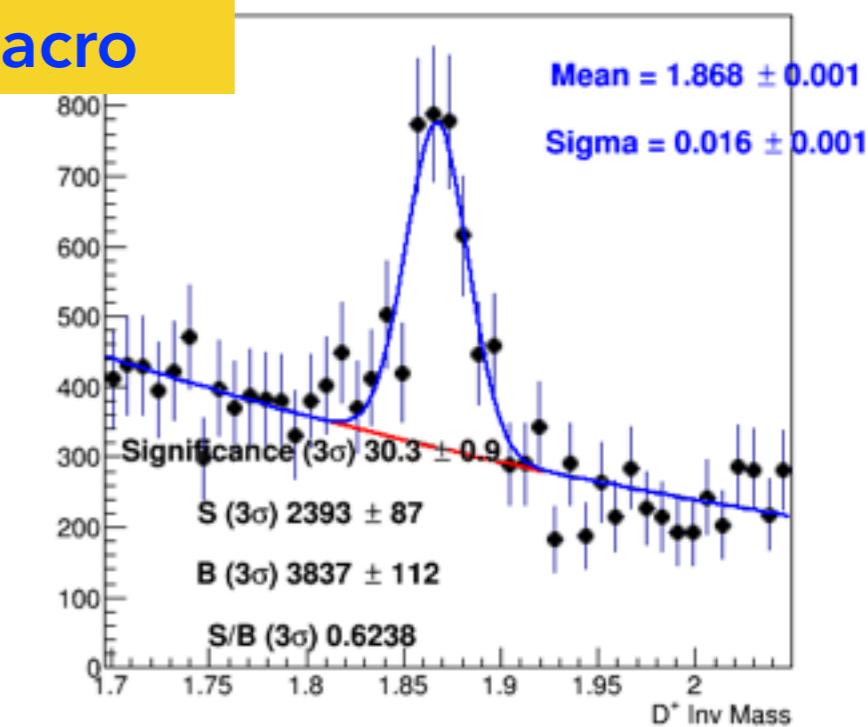
DplusMass_pT_bin5

Mid p_T (6-7 GeV/c)Reco_Dplus_Mass_Histo projection D⁺ Inv Mass

DplusMass_pT_bin6

High p_T (7-8 GeV/c)Reco_Dplus_Mass_Histo projection D⁺ Inv Mass

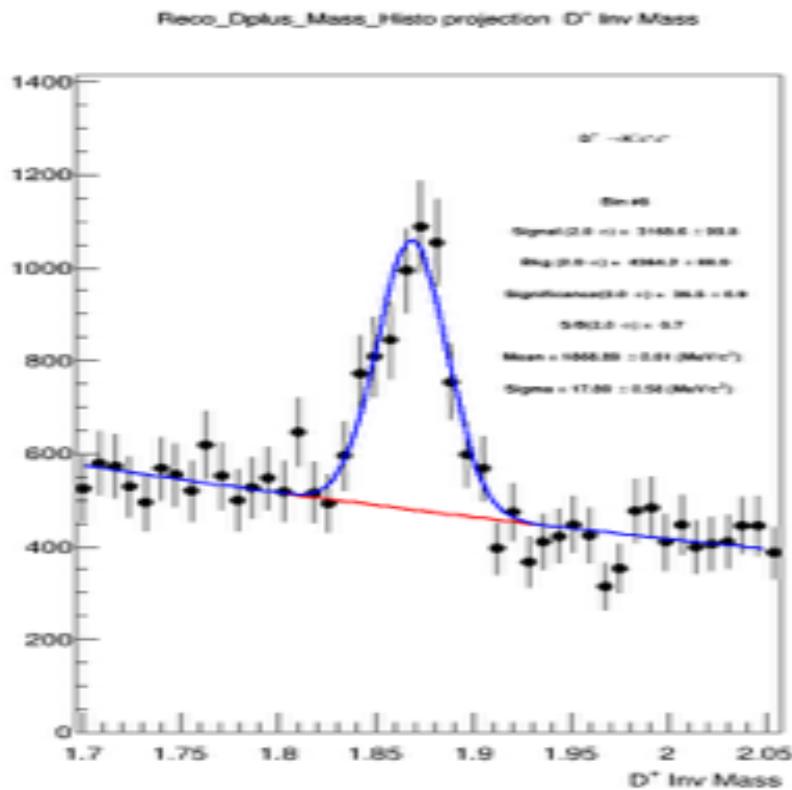
DplusMass_pT_bin7



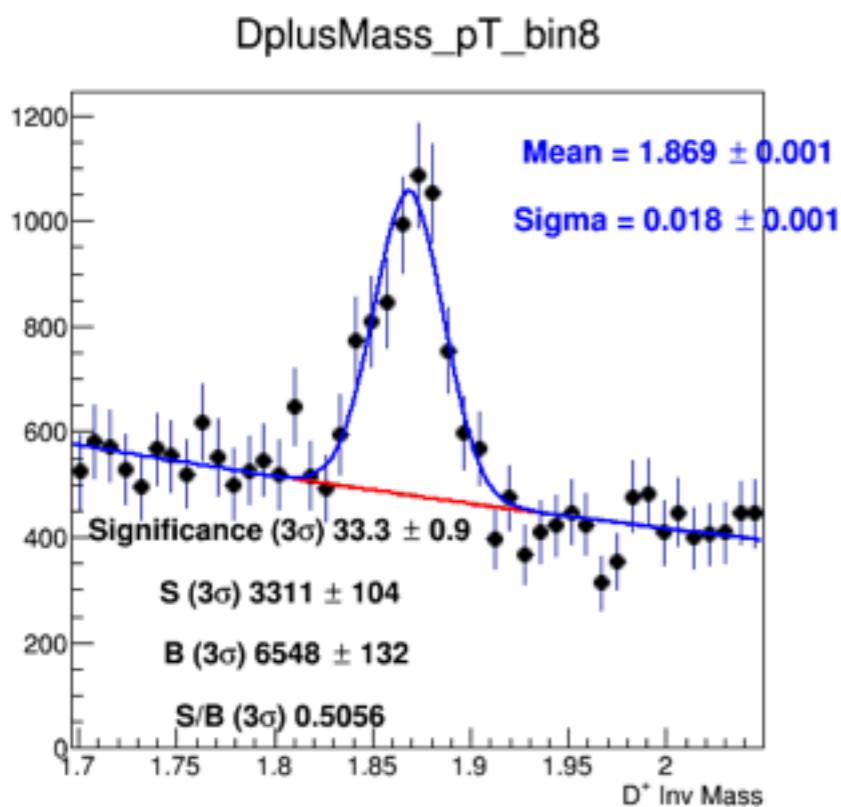
New Macro

Old Macro

Low p_T (8-16 GeV/c)



New Macro



Old Macro

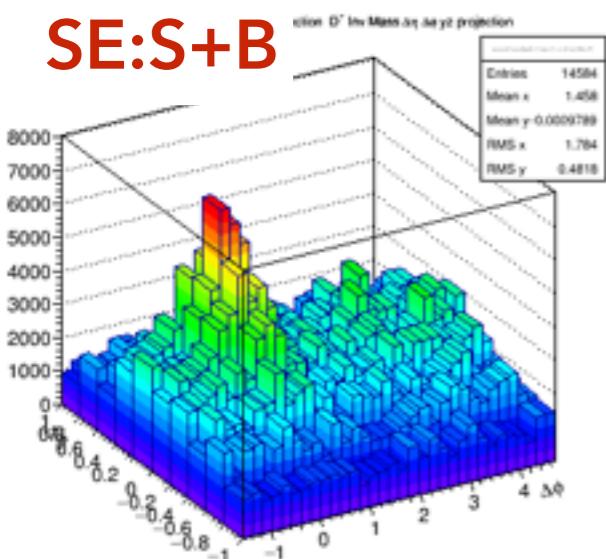
*33

Detailed Plots (paper files pp)

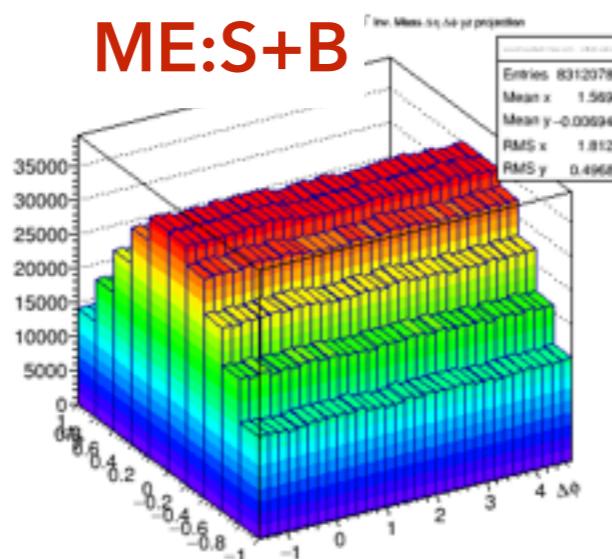
Asso $p_T > 0.3 \text{ GeV}/c$

$D^+ p_T (3-4 \text{ GeV}/c)$

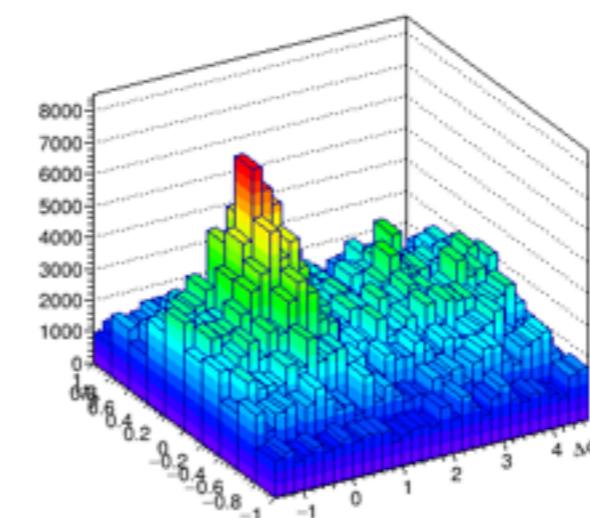
SE:S+B



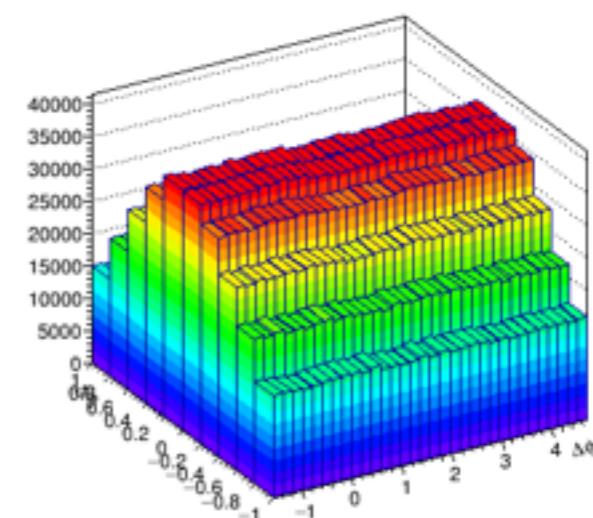
ME:S+B



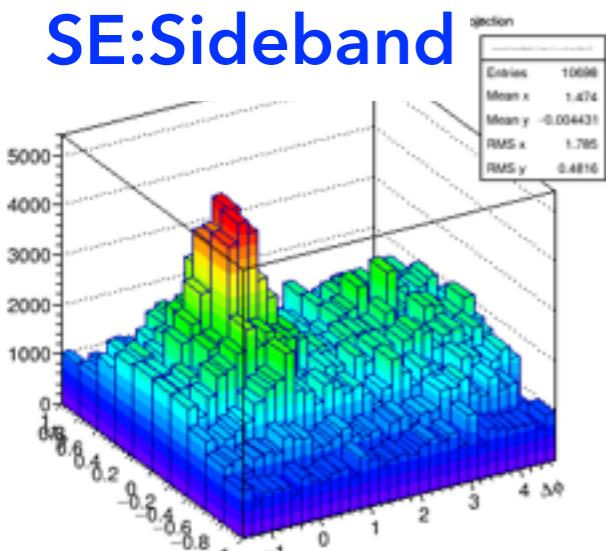
SE_2D_DPt3_SB_0.3to99.0



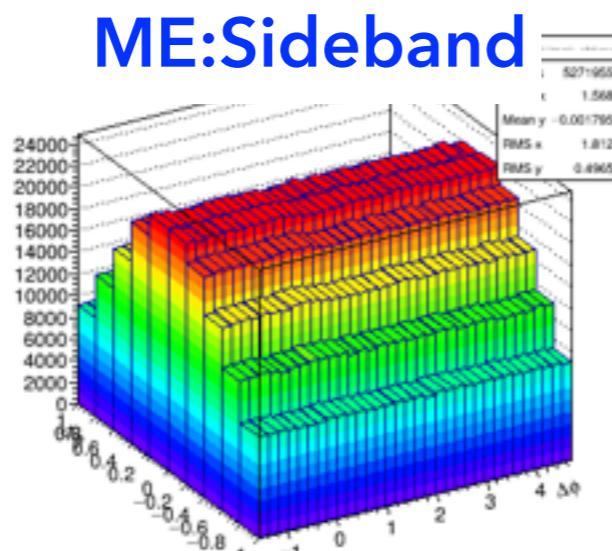
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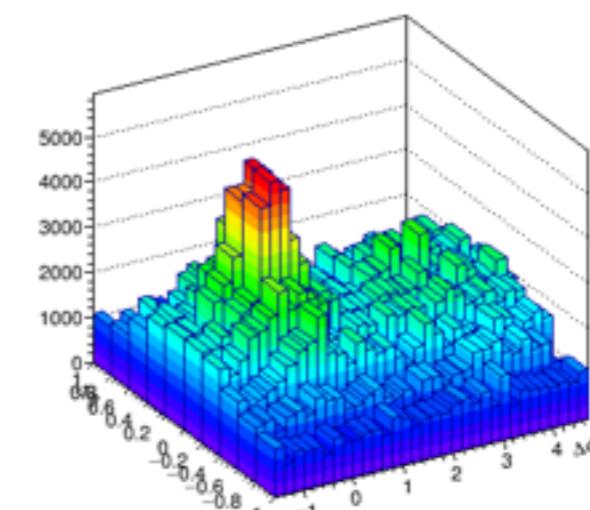
SE:Sideband



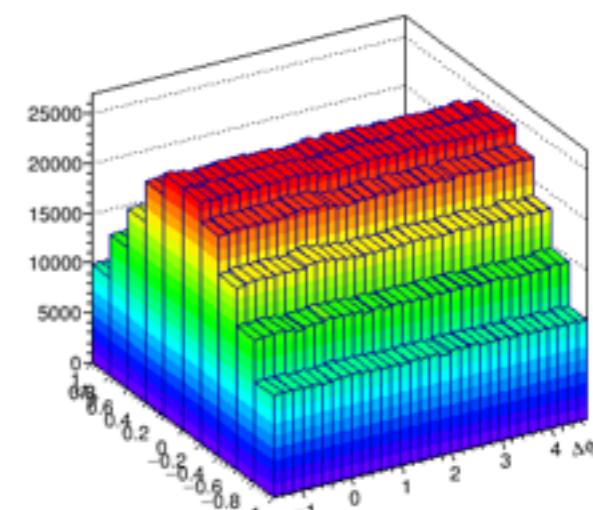
ME:Sideband



SE_2D_DPt3_LRSB_0.3to99.0



ME_2D_DPt3_LRSB_0.3to99.0

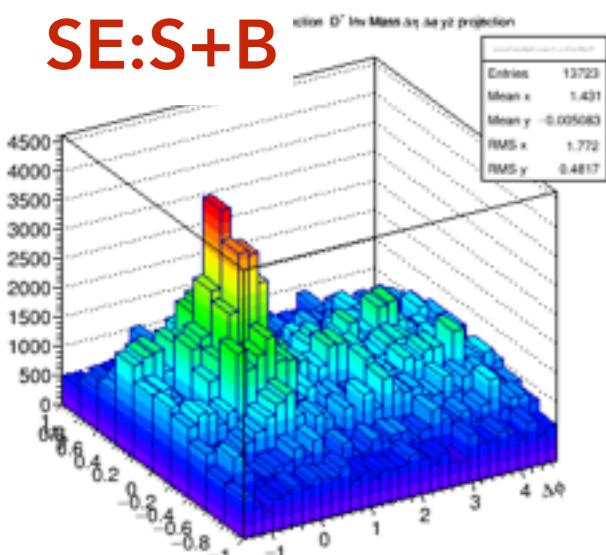


New Macro

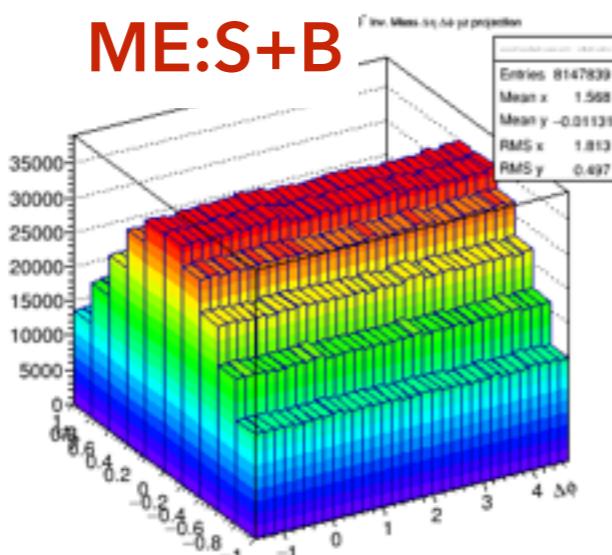
Old Macro

$D^+ p_T (4-5 \text{ GeV}/c)$

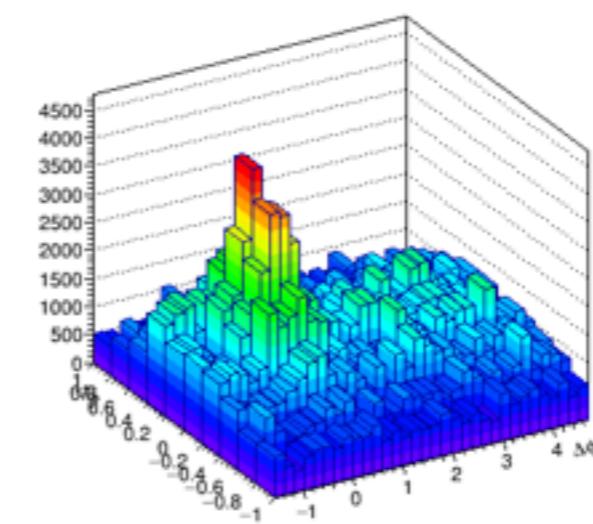
SE:S+B



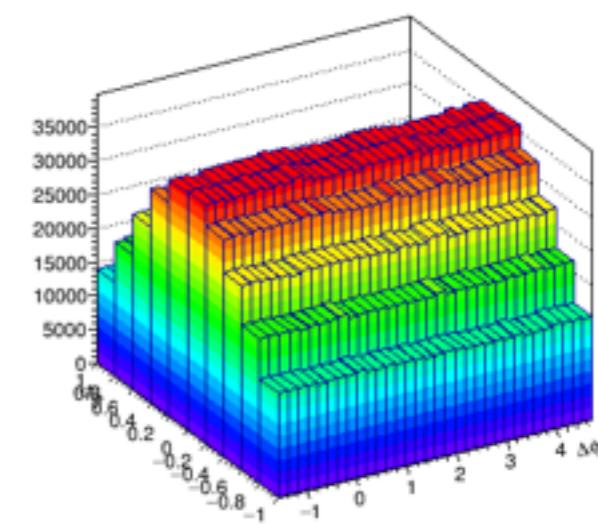
ME:S+B



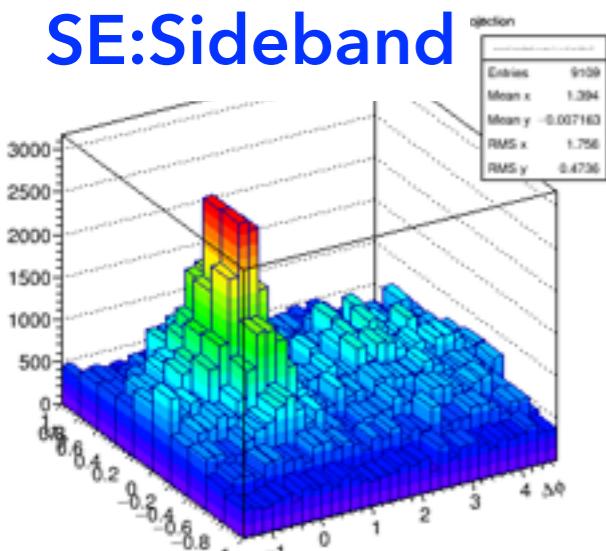
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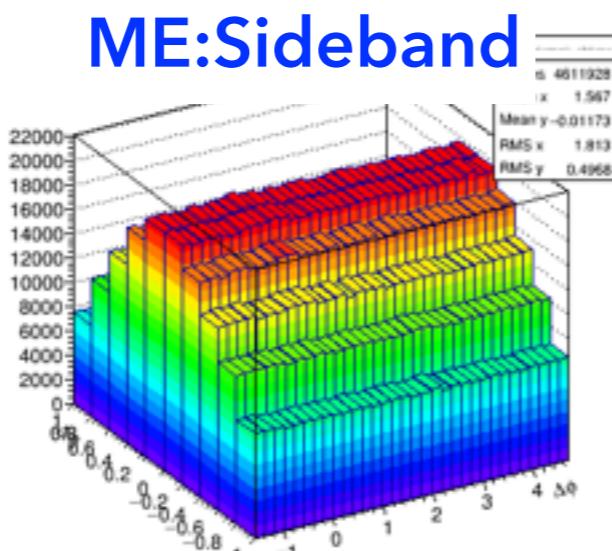
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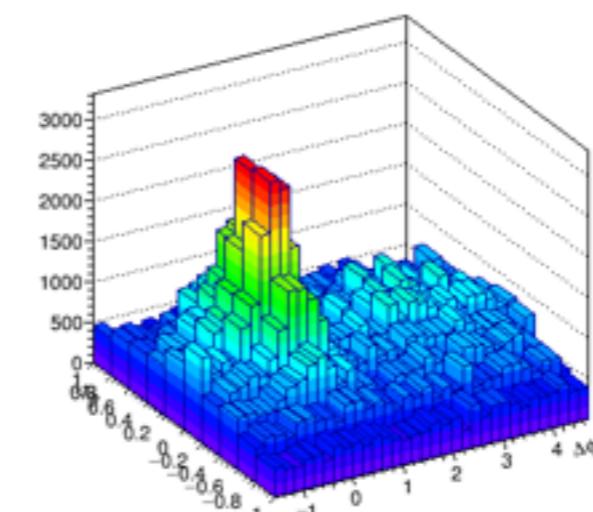
SE:Sideband



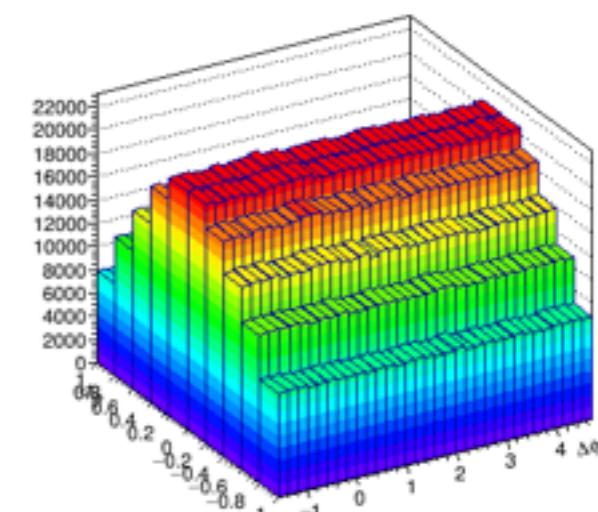
ME:Sideband



SE_2D_DPt4_LRSB_0.3to99.0



ME_2D_DPt4_LRSB_0.3to99.0

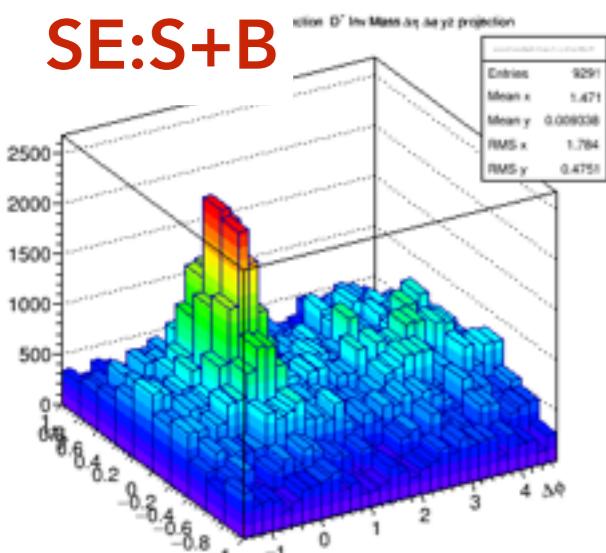


New Macro

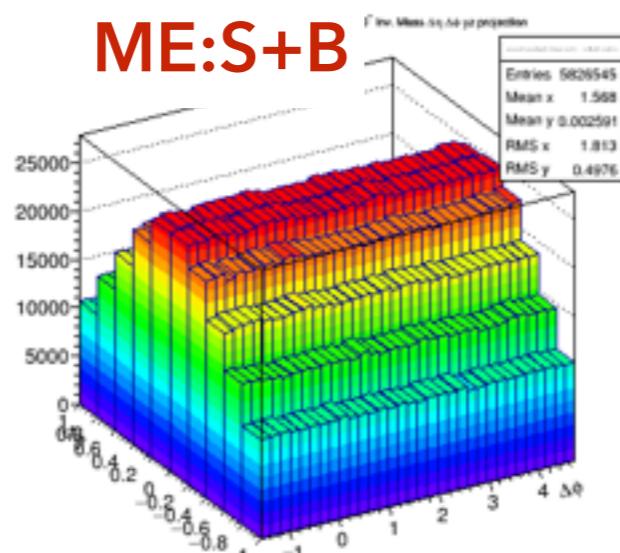
Old Macro

D⁺ p_T (5-6 GeV/c)

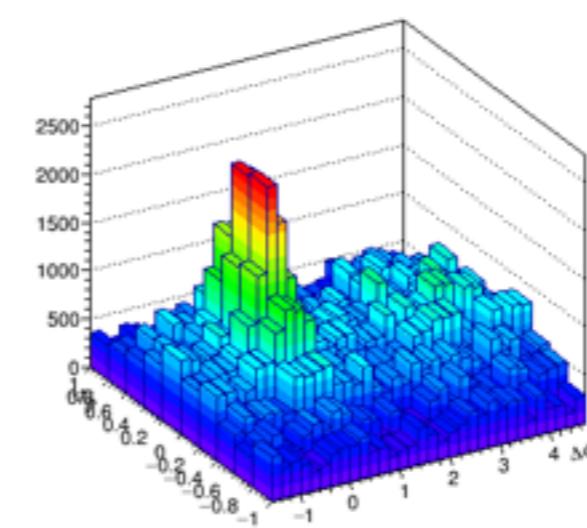
SE:S+B



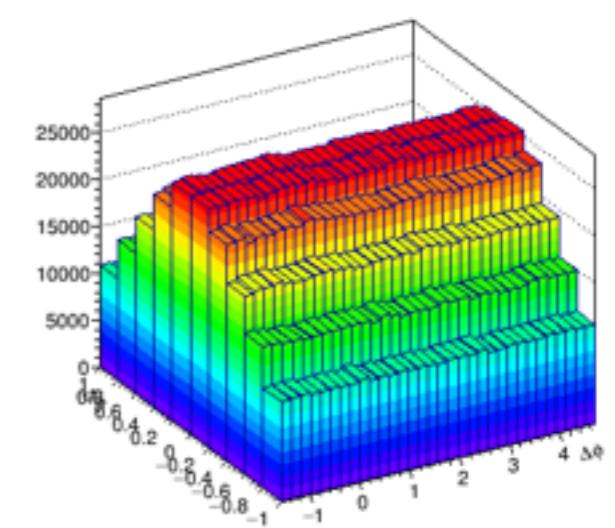
ME:S+B



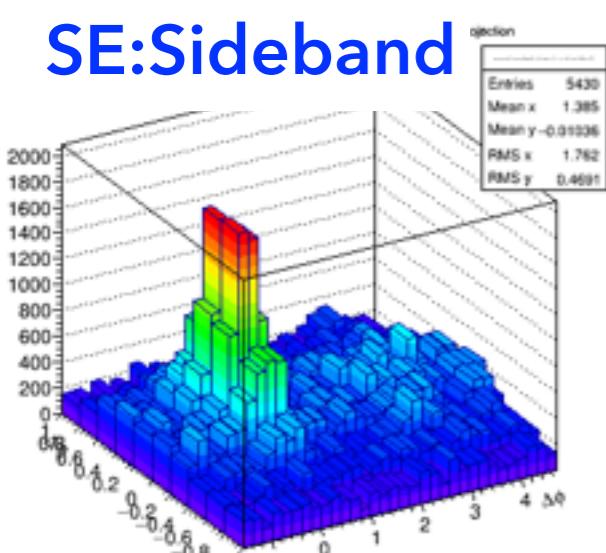
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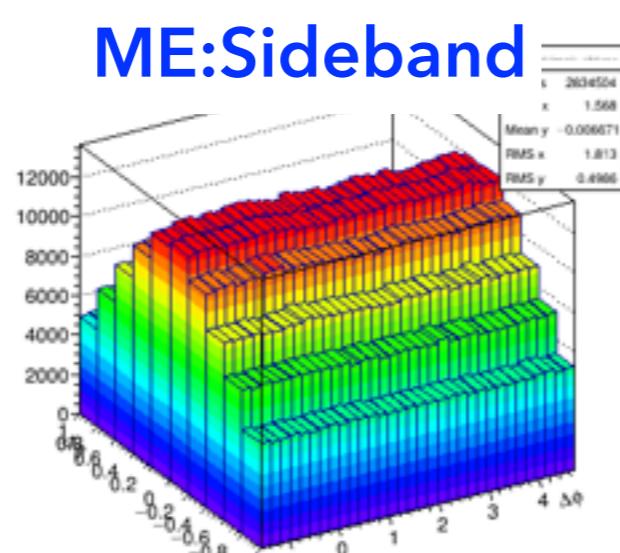
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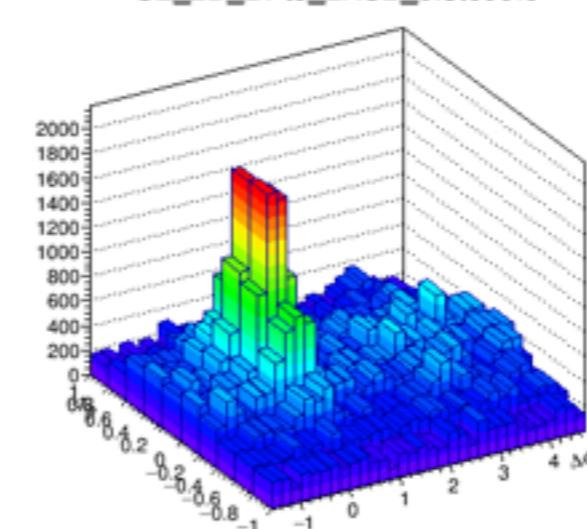
SE:Sideband



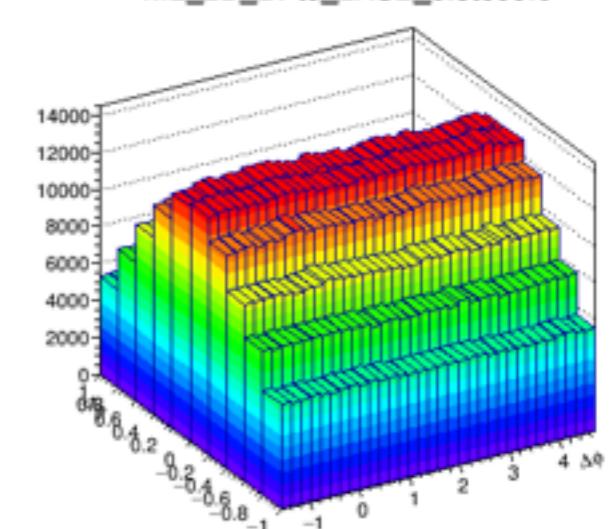
ME:Sideband



SE_2D_DPt5_LRSB_0.3to99.0



ME_2D_DPt5_LRSB_0.3to99.0

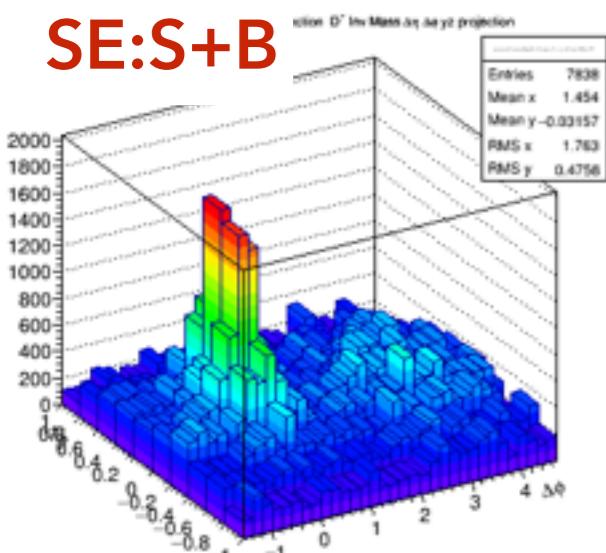


New Macro

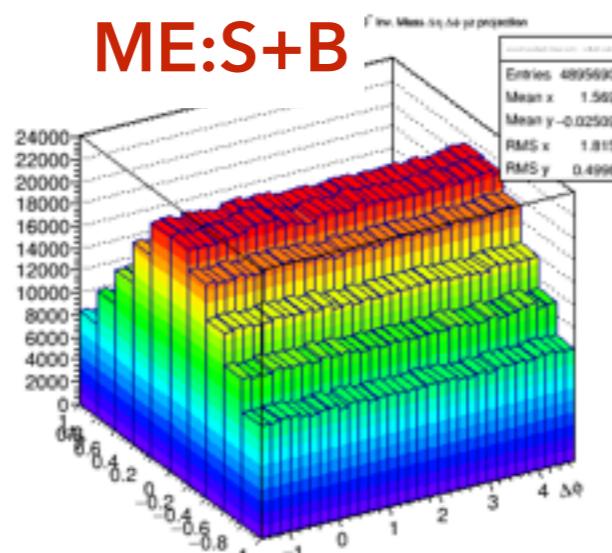
Old Macro

D⁺ p_T (6-7 GeV/c)

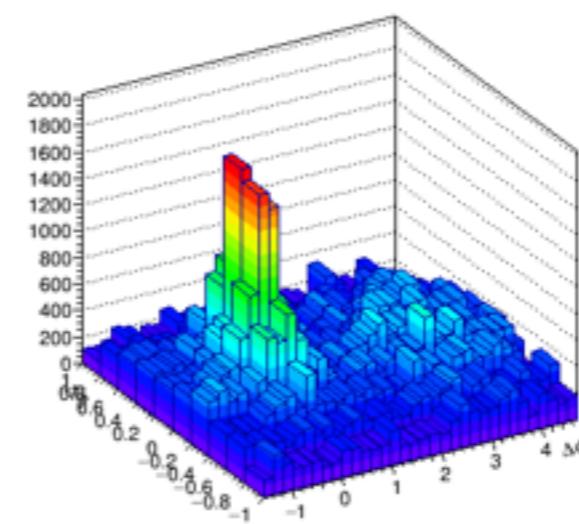
SE:S+B



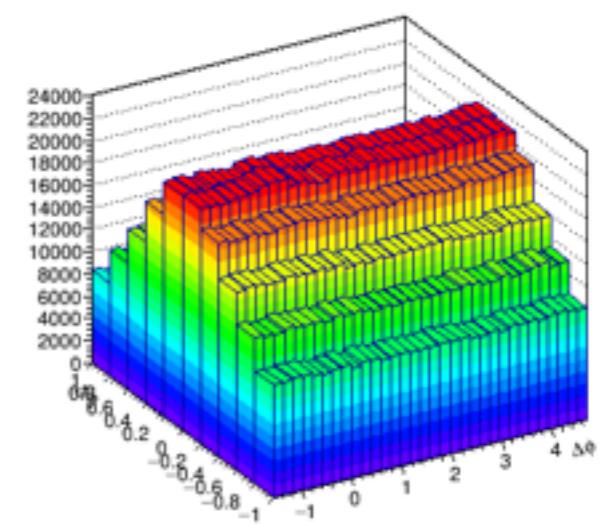
ME:S+B



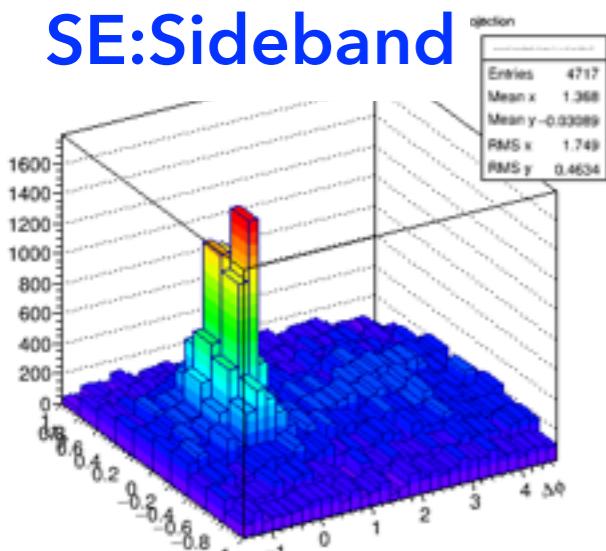
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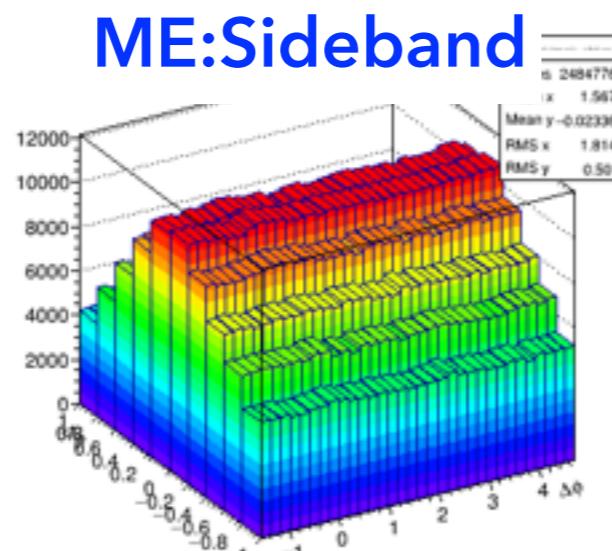
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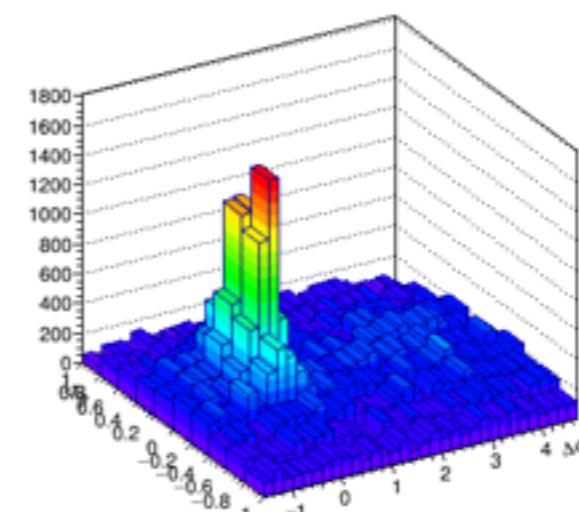
SE:Sideband



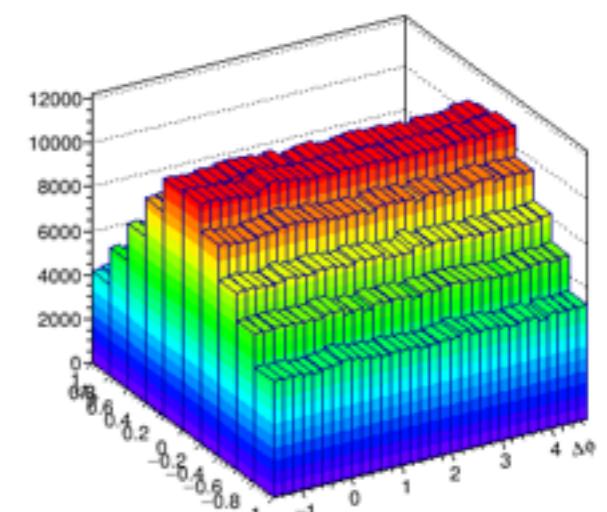
ME:Sideband



SE_2D_DPt6_LRSB_0.3to99.0



ME_2D_DPt6_LRSB_0.3to99.0

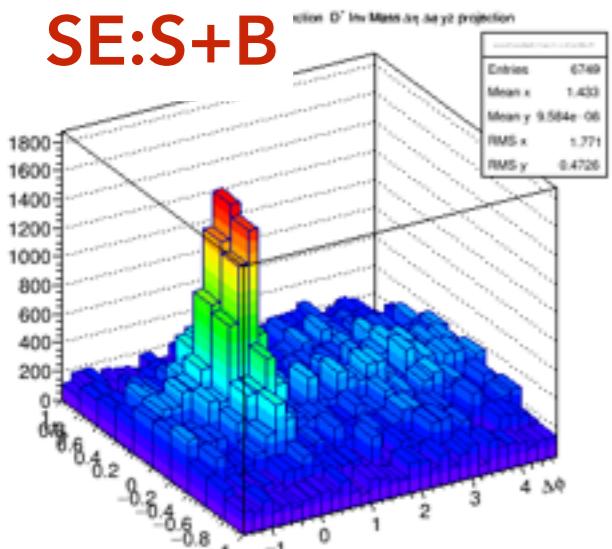


New Macro

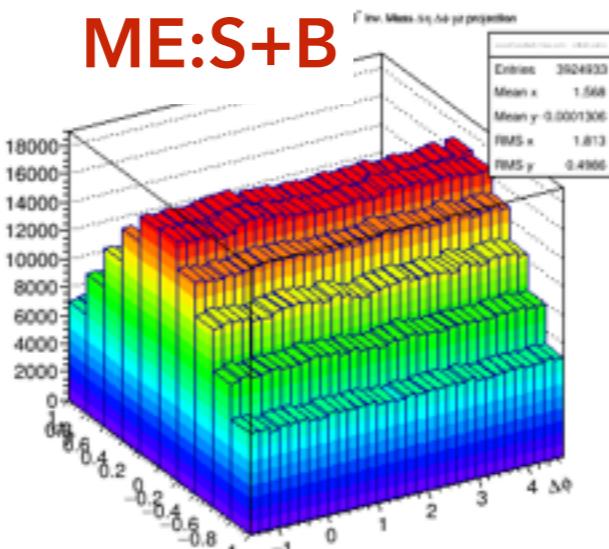
Old Macro

D⁺ p_T (7-8 GeV/c)

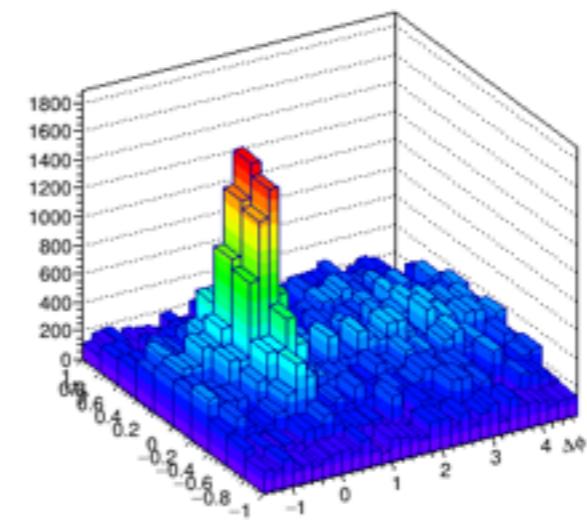
SE:S+B



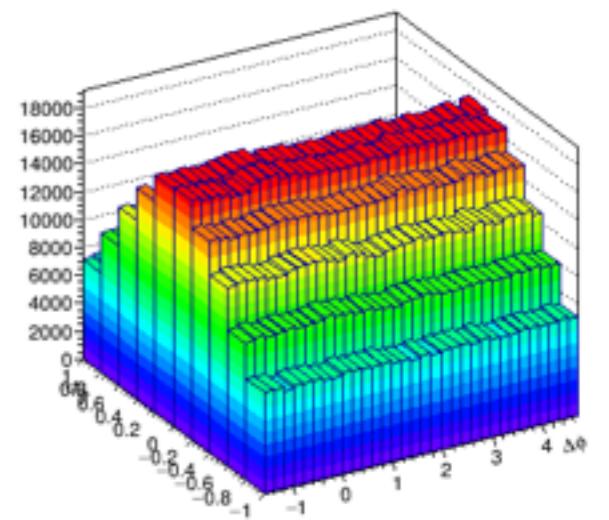
ME:S+B



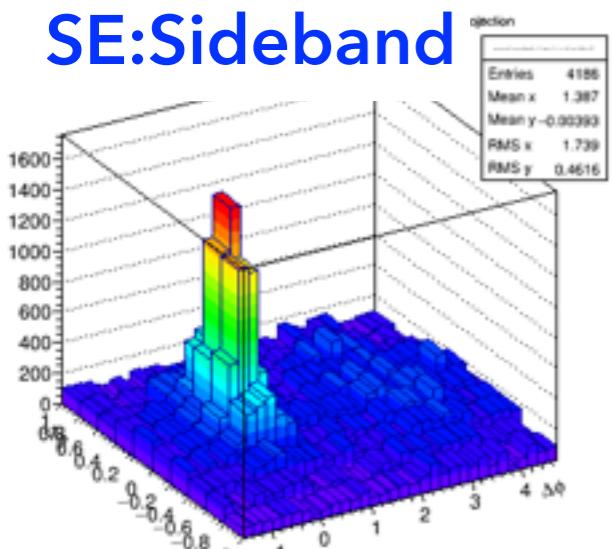
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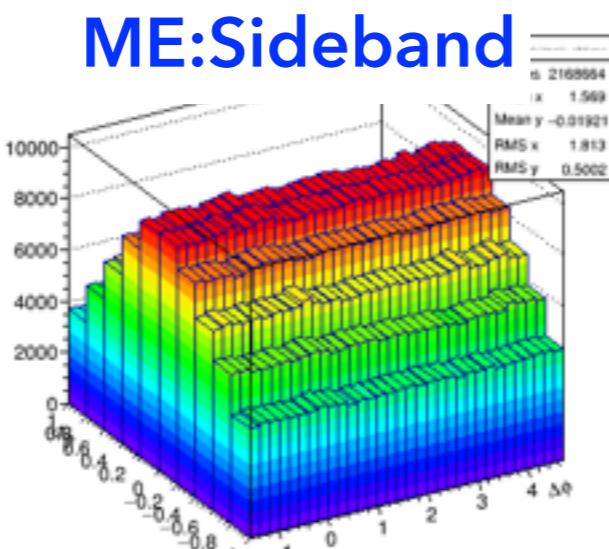
ME_2D_DPt7_SB_0.3to99.0



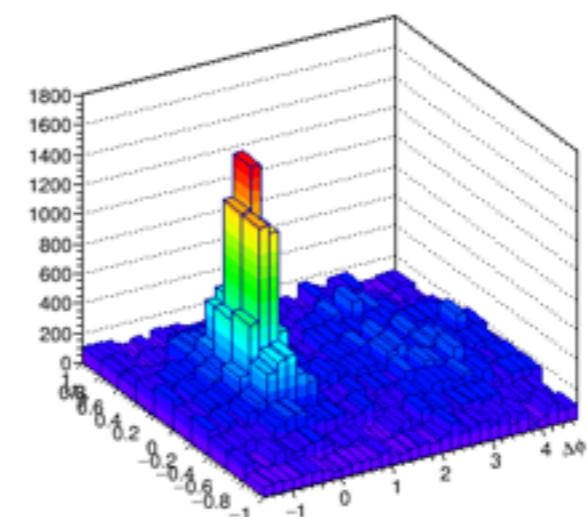
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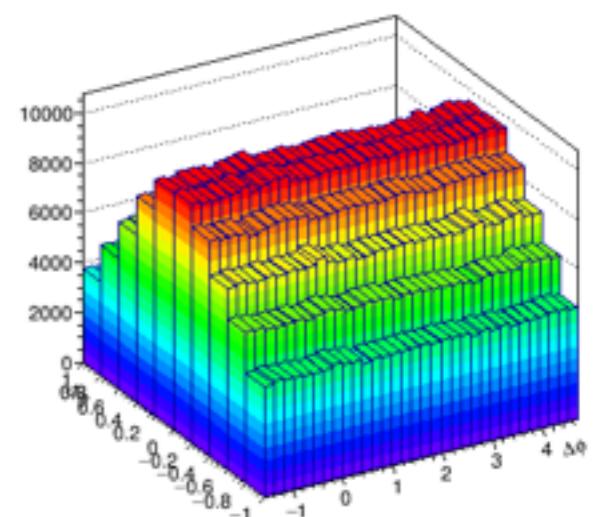
ME:Sideband



SE_2D_DPt7_LRSB_0.3to99.0



ME_2D_DPt7_LRSB_0.3to99.0

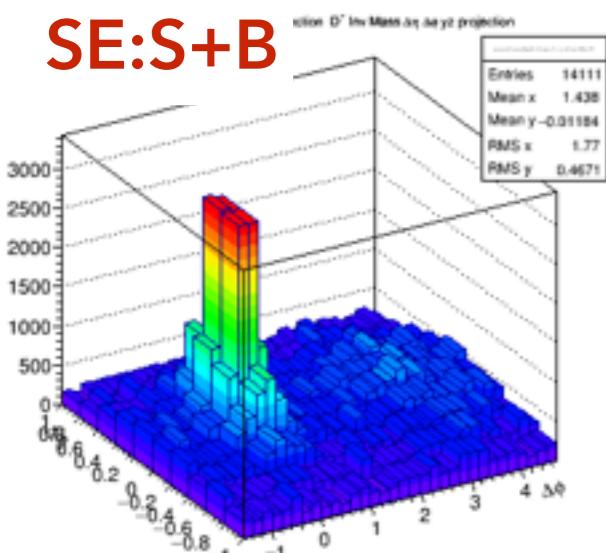


New Macro

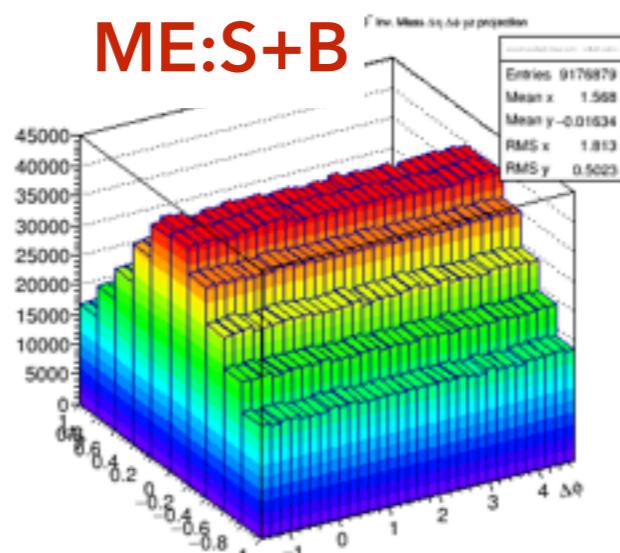
Old Macro

$D^+ p_T (8-16 \text{ GeV}/c)$

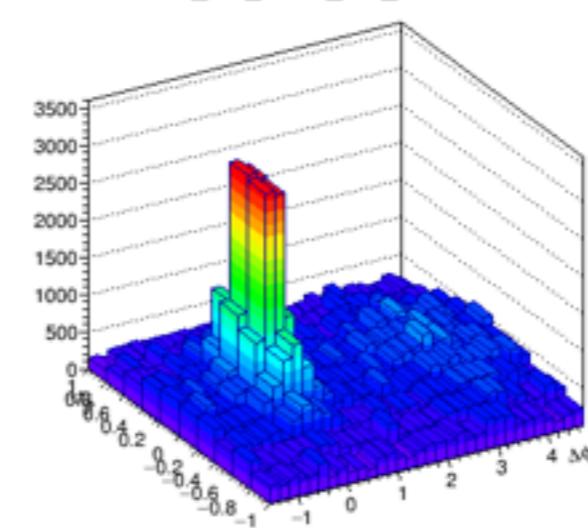
SE:S+B



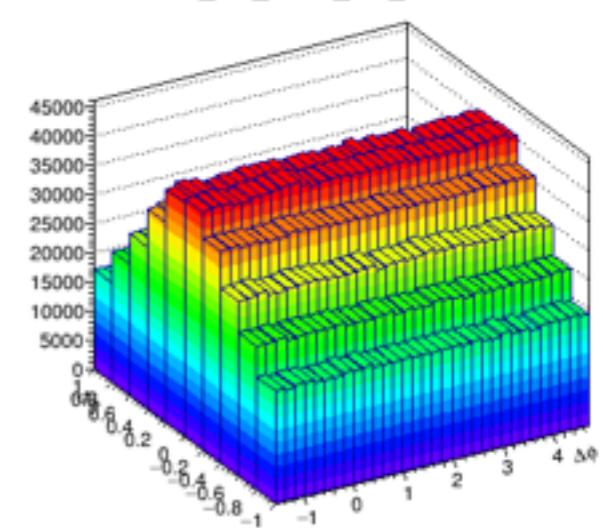
ME:S+B



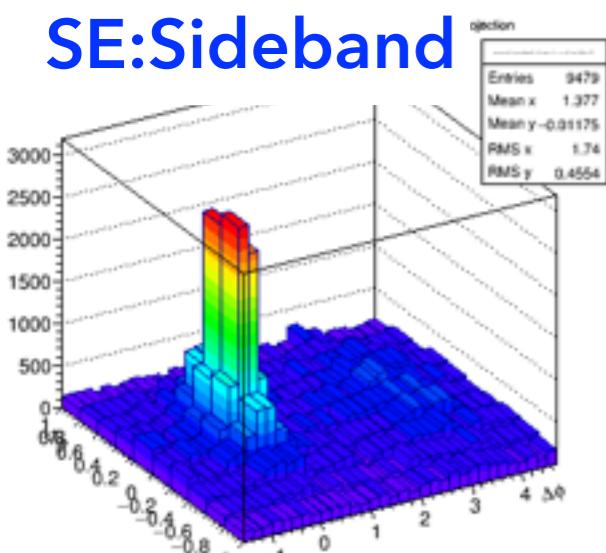
SE_2D_DPt8_SB_0.3to99.0



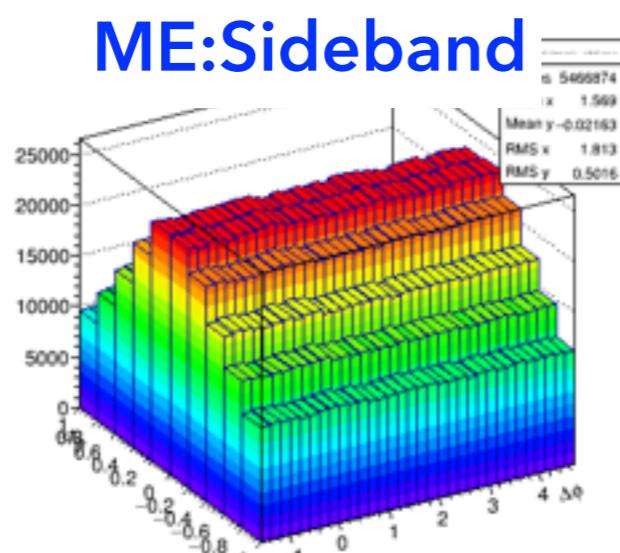
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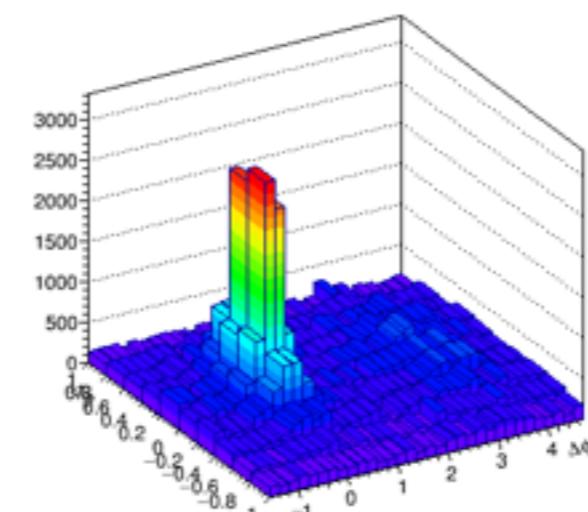
SE:Sideband



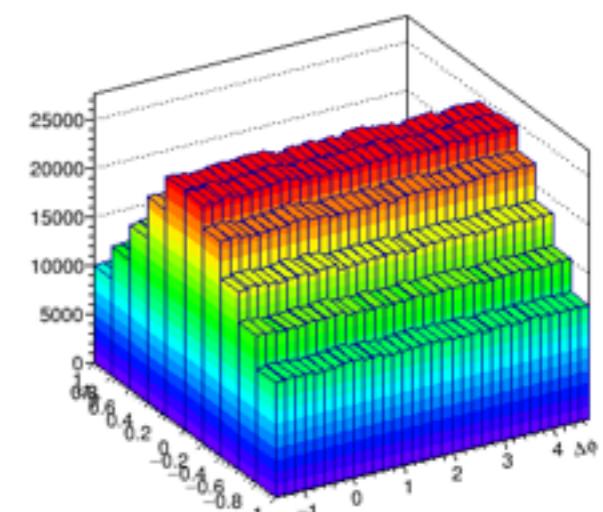
ME:Sideband



SE_2D_DPt8_LRSB_0.3to99.0



ME_2D_DPt8_LRSB_0.3to99.0



New Macro

Old Macro

*39

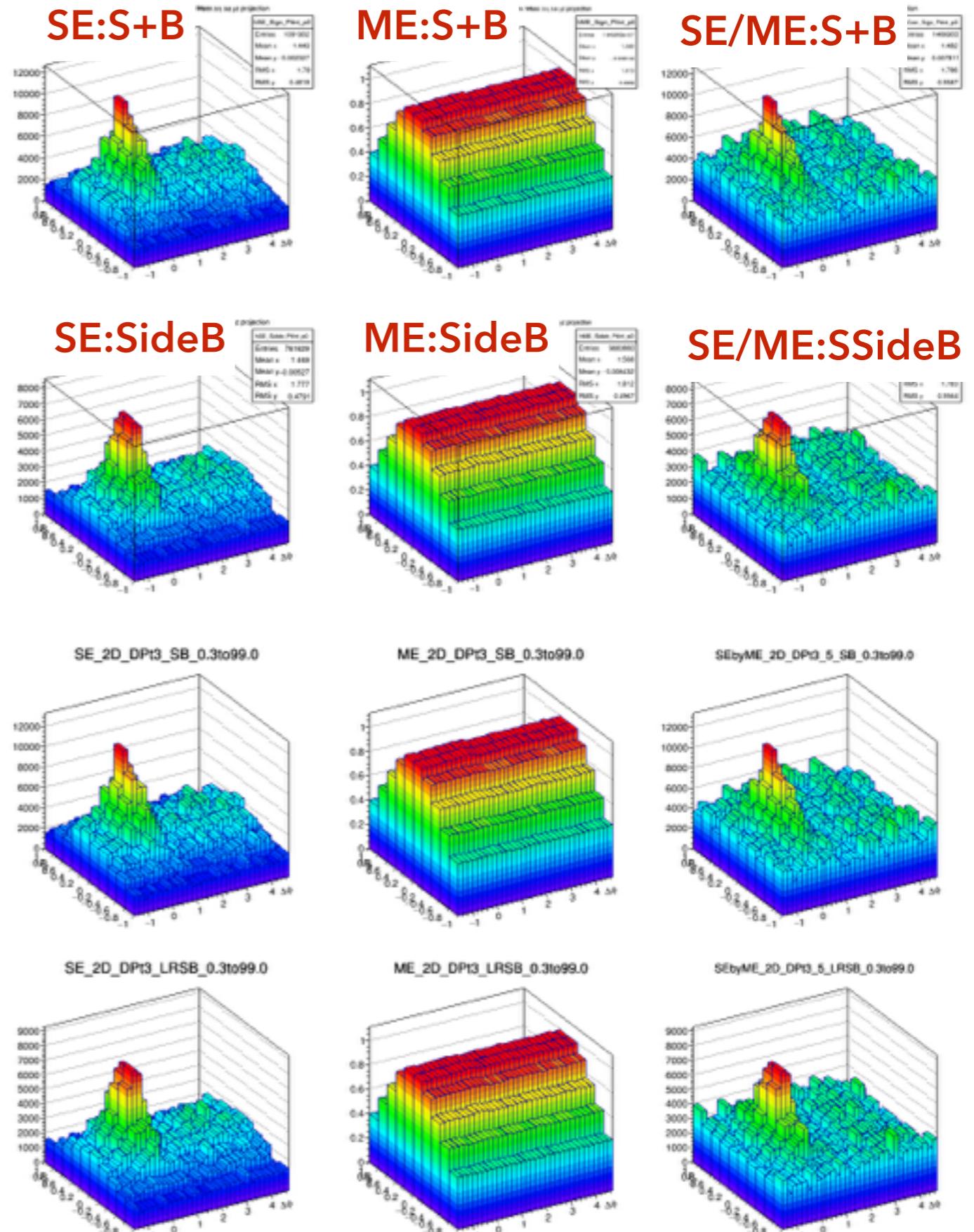
Detailed Plots (paper files pp)

D⁺ p_T (3-5 GeV/c)

Asso $p_T > 0.3$ GeV/c

New Macro

Old Macro



*40

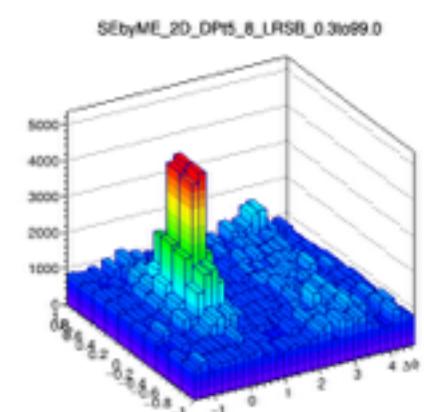
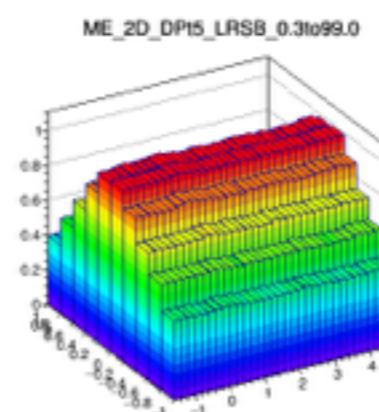
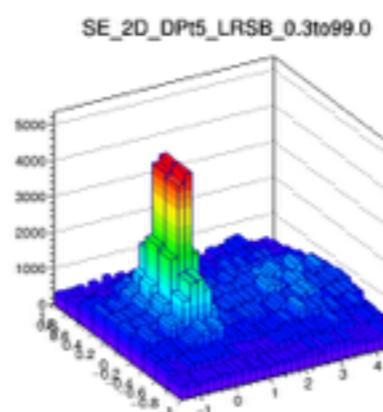
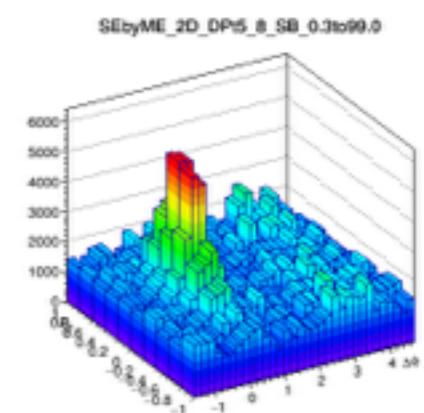
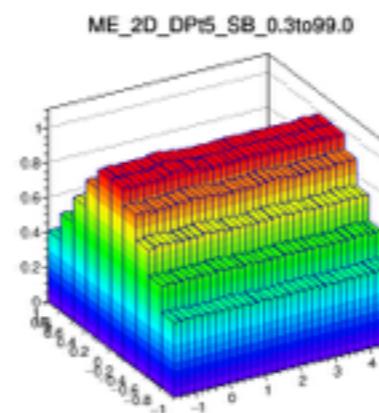
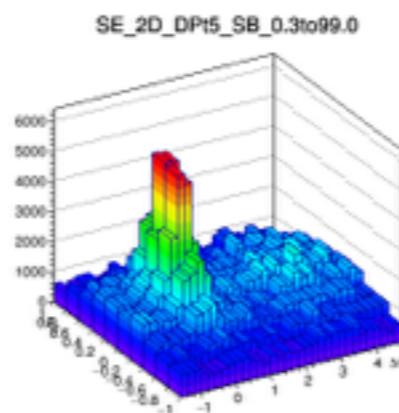
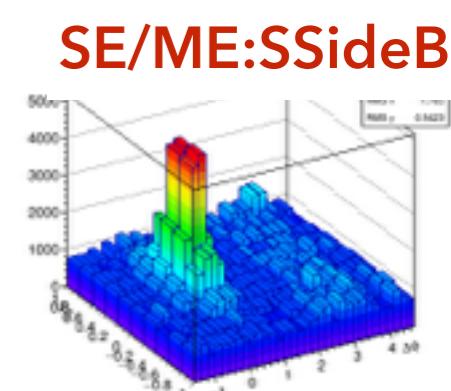
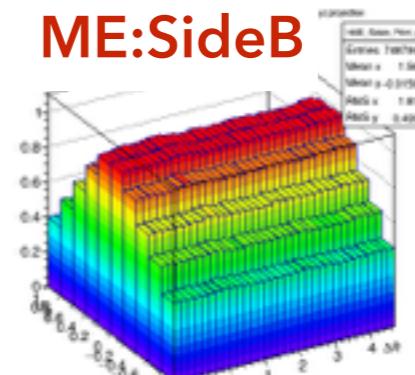
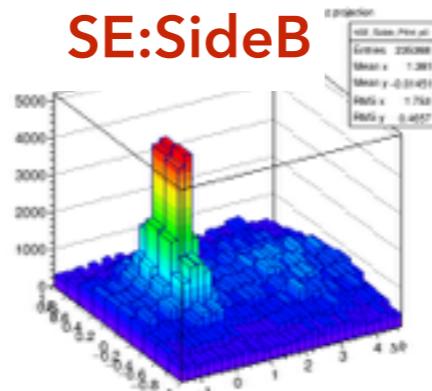
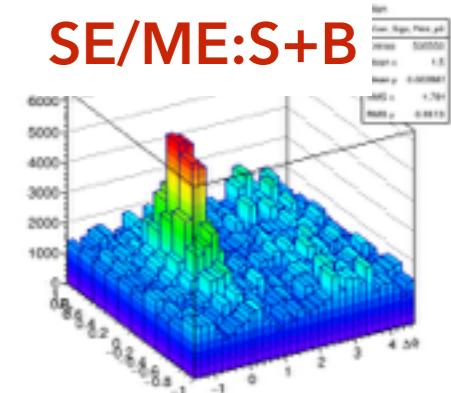
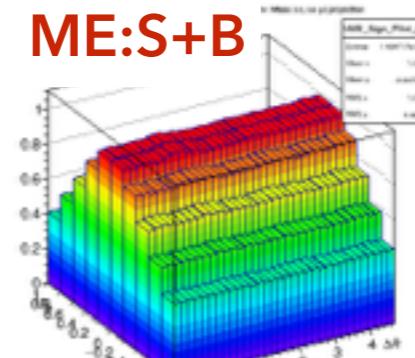
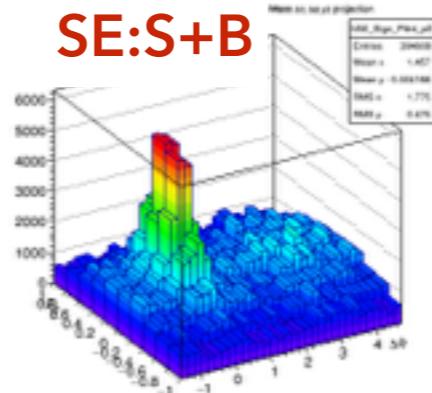
Detailed Plots (paper files pp)

D⁺ p_T (5-8 GeV/c)

Asso $p_T > 0.3$ GeV/c

New Macro

Old Macro



*41

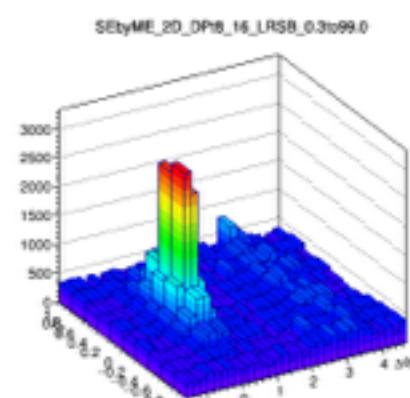
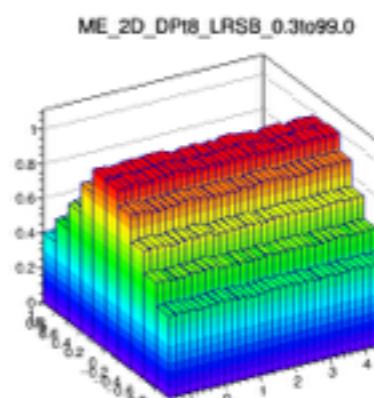
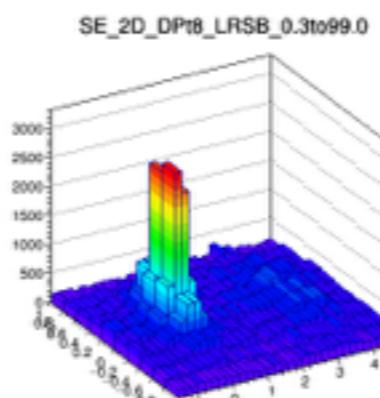
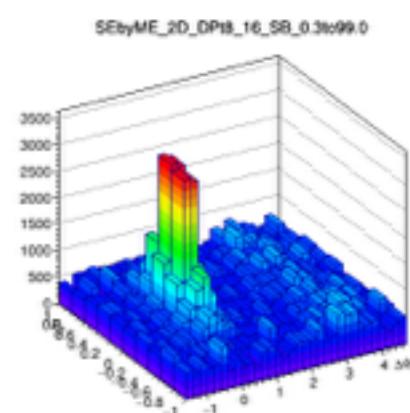
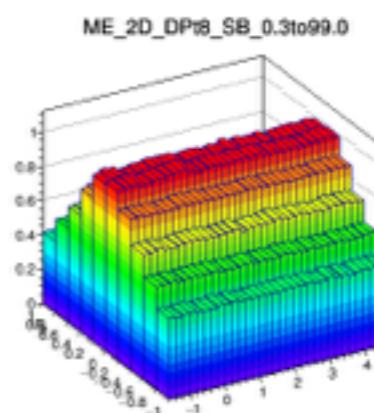
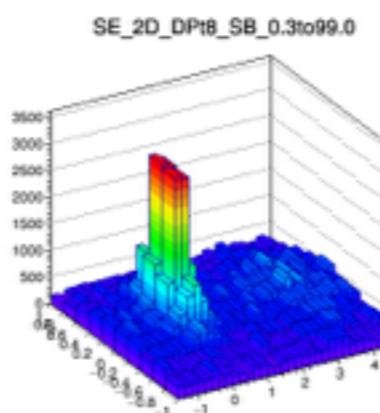
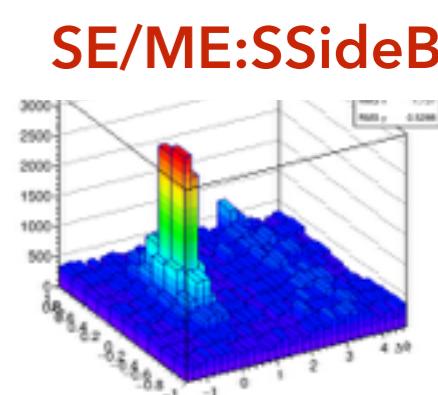
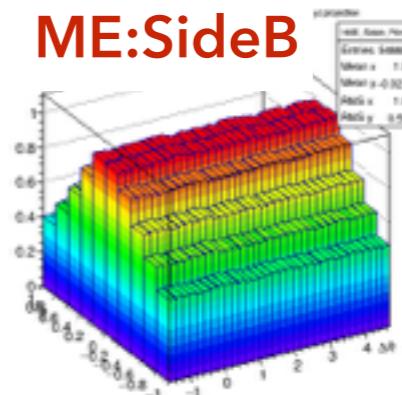
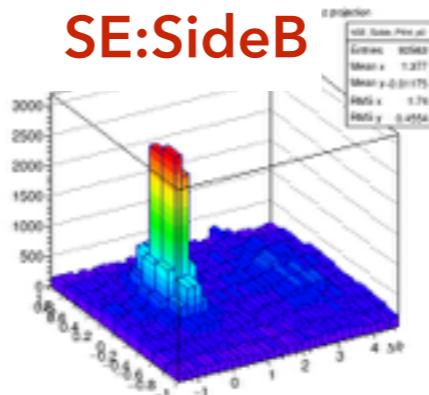
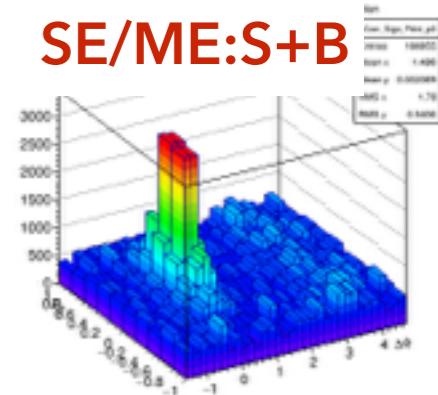
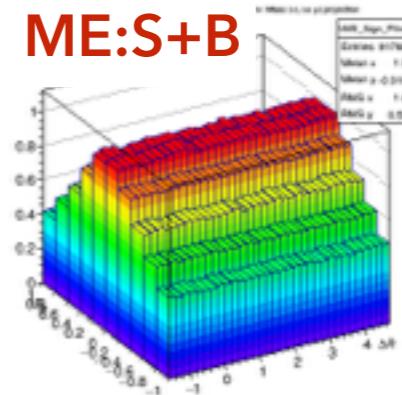
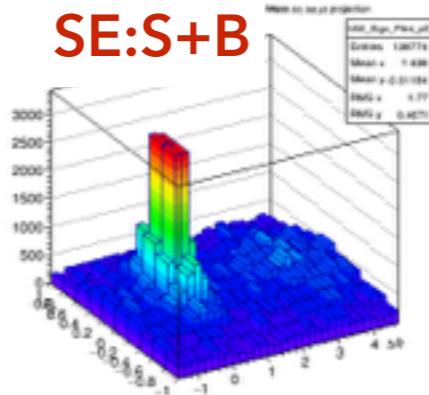
Detailed Plots (paper files pp)

D⁺ p_T (8-16 GeV/c)

Asso $p_T > 0.3$ GeV/c

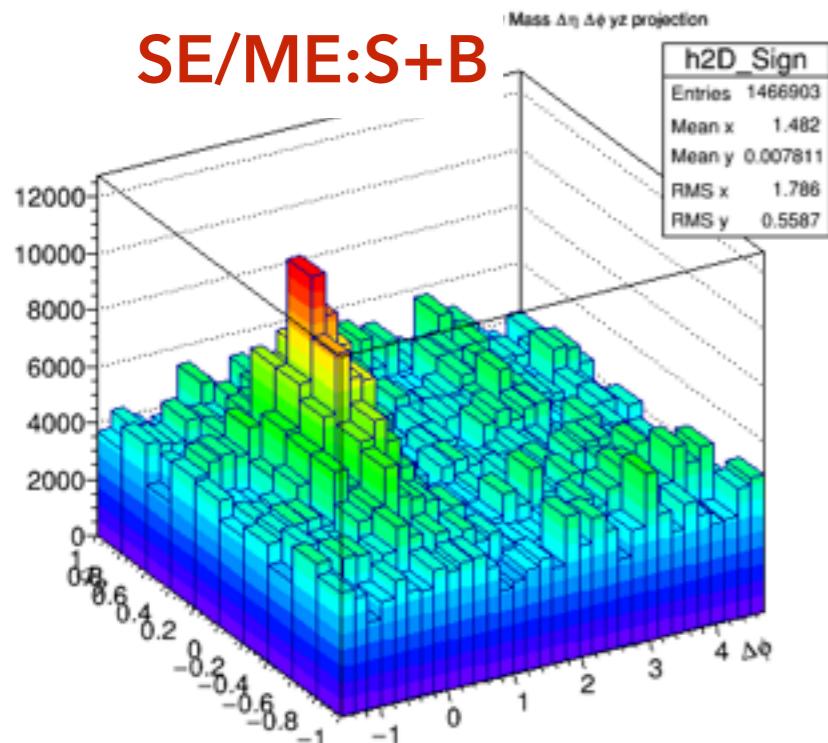
New Macro

Old Macro

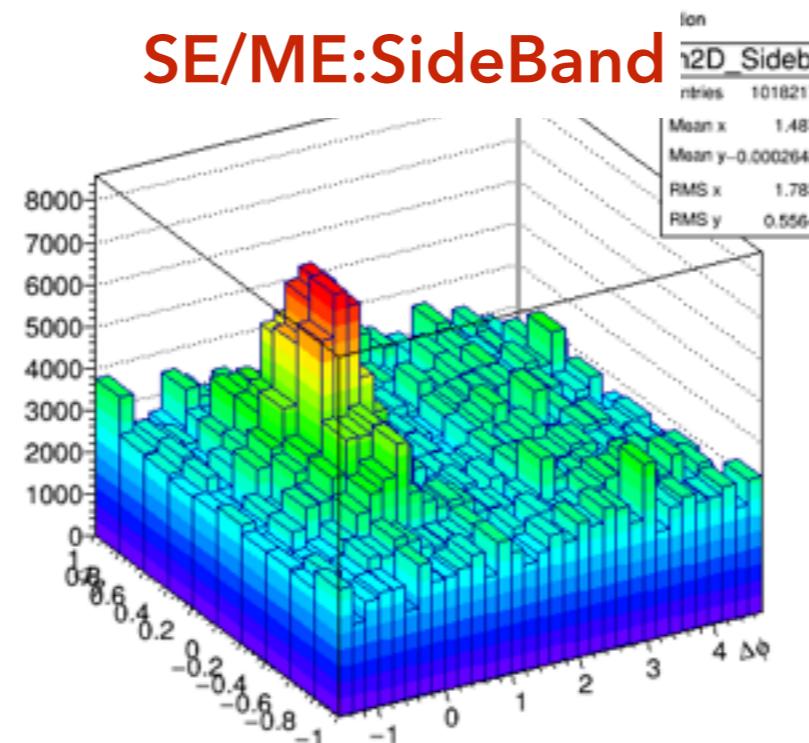


Low p_T (3-5 GeV/c)

SE/ME:S+B

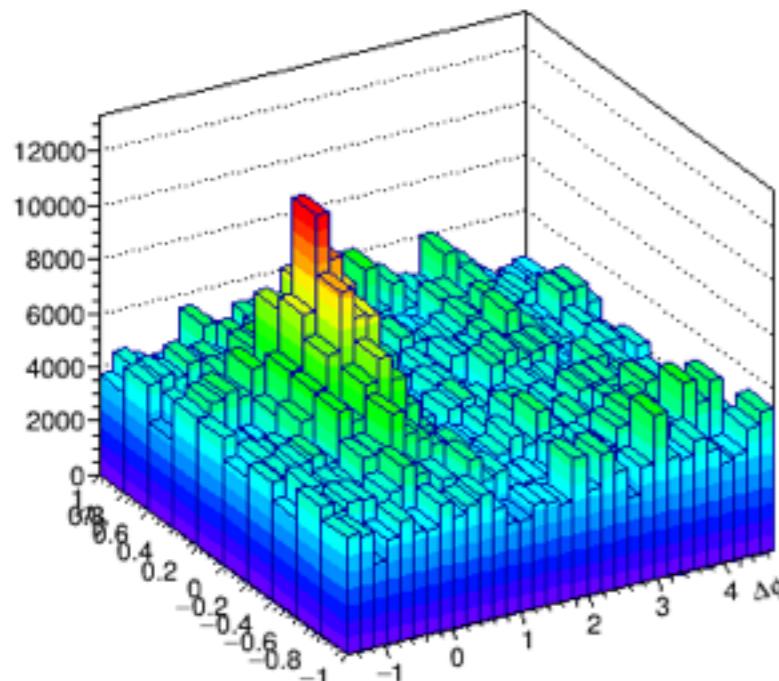


SE/ME:SideBand

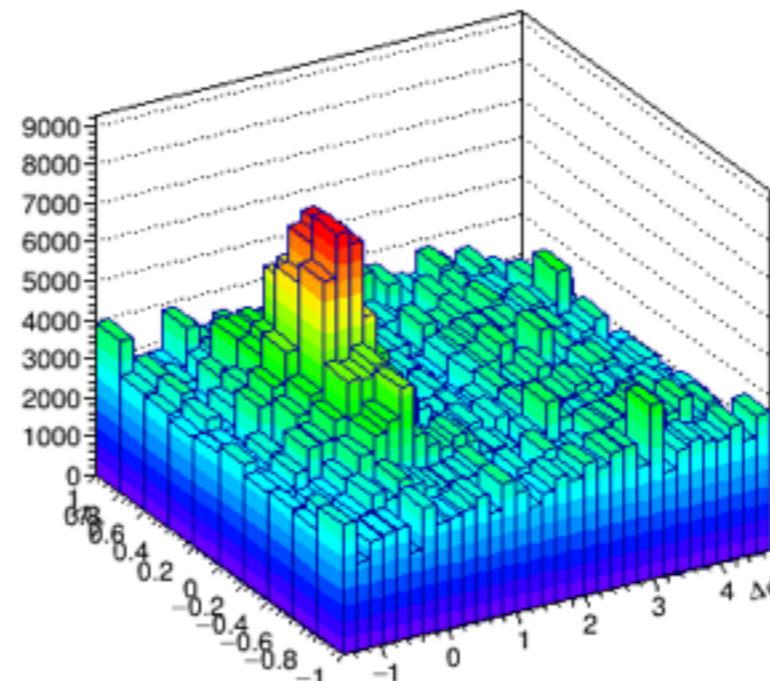


New Macro

SEbyME_2D_DPt3_5_SB_0.3to99.0



SEbyME_2D_DPt3_5_LRSB_0.3to99.0



Old Macro

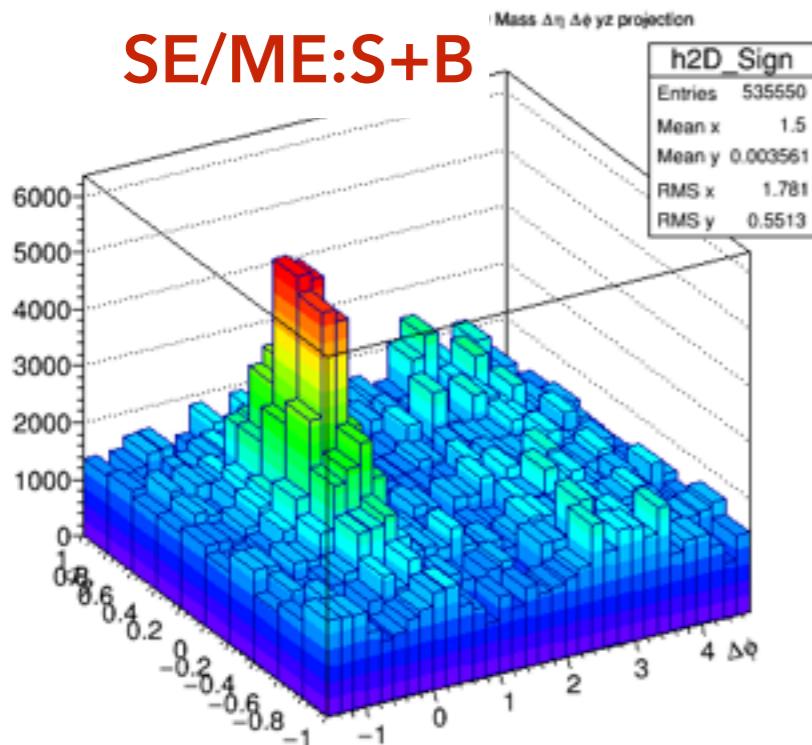
*43

Detailed Plots (paper files pp)

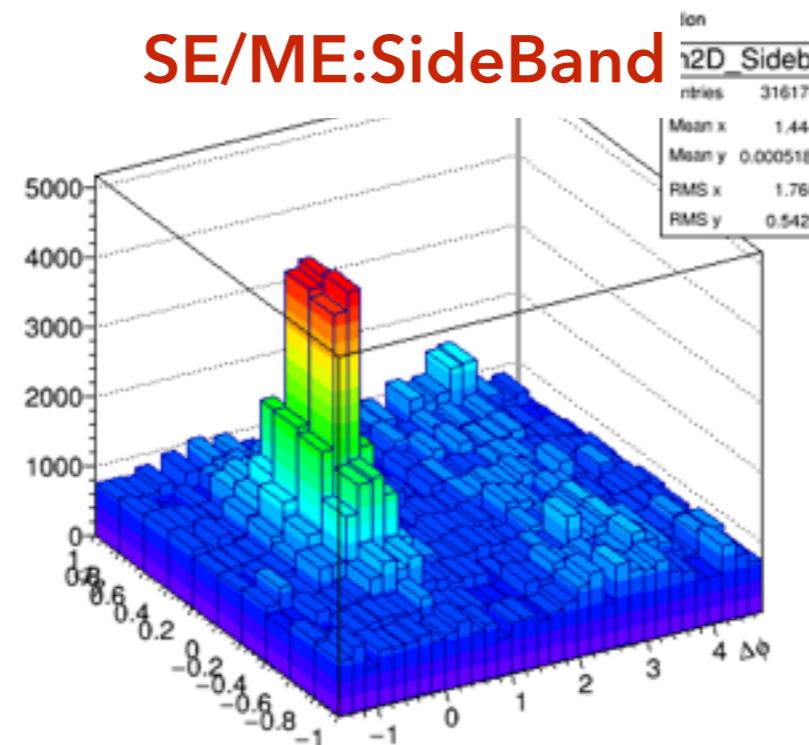
Asso $p_T > 0.3 \text{ GeV}/c$

Low p_T (5-8 GeV/c)

SE/ME:S+B

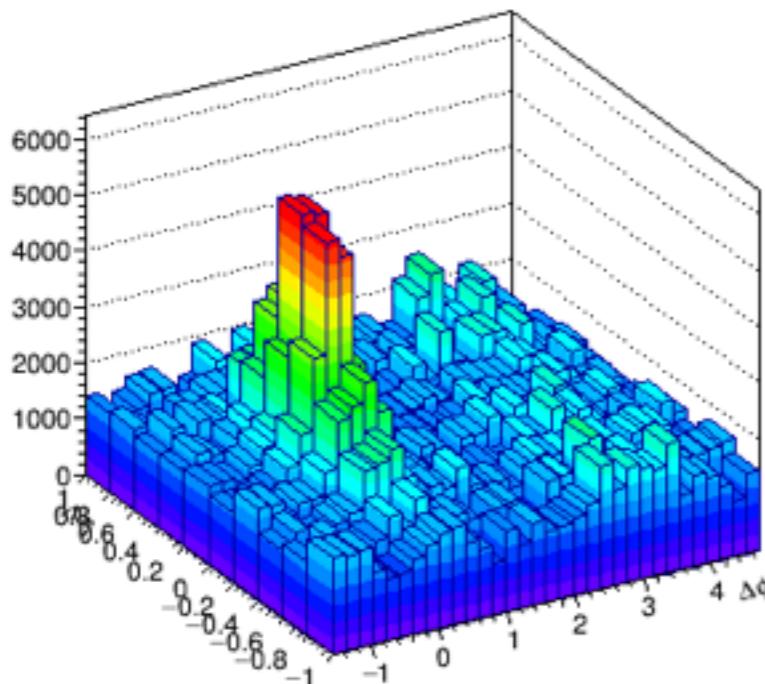


SE/ME:SideBand

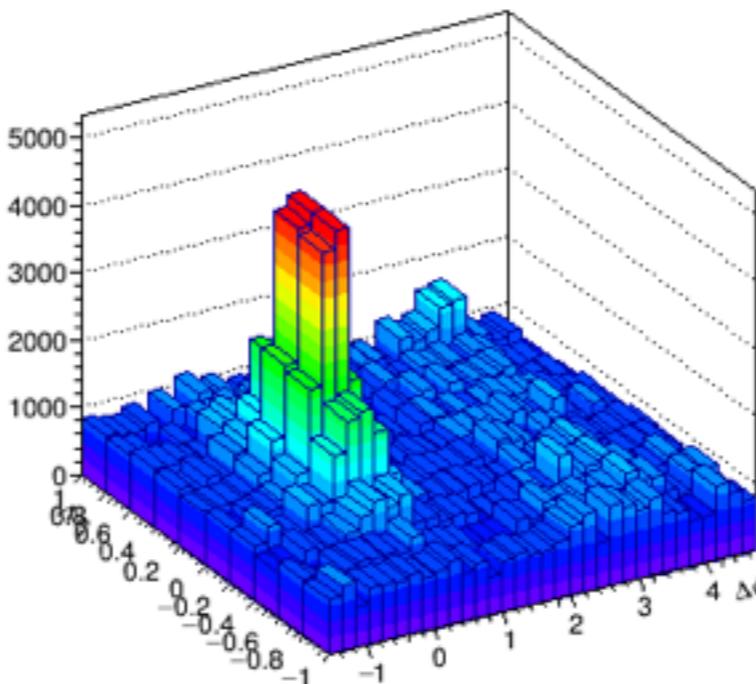


New Macro

SEbyME_2D_DPt5_8_SB_0.3to99.0



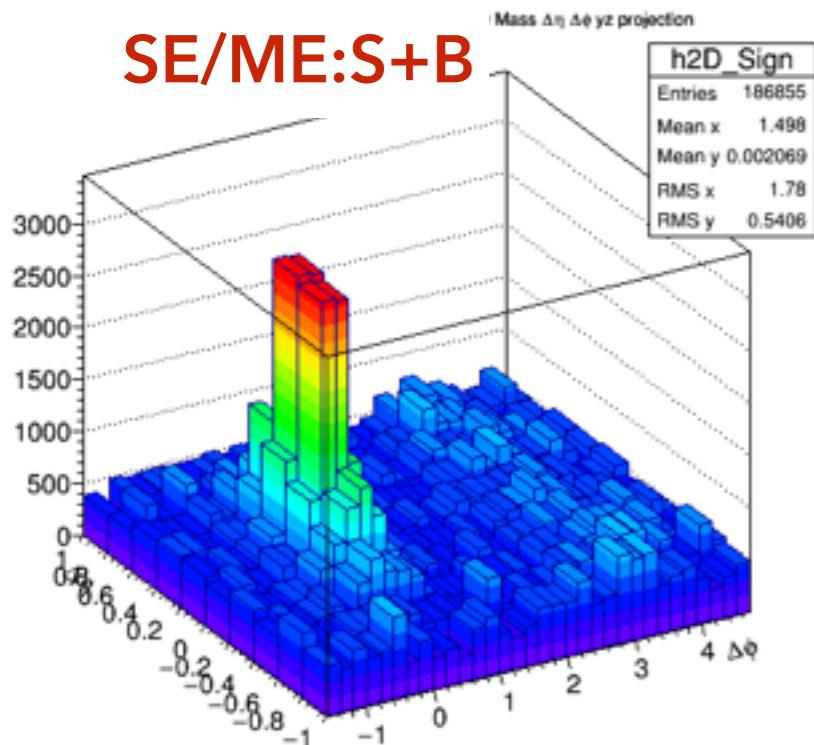
SEbyME_2D_DPt5_8_LRSB_0.3to99.0



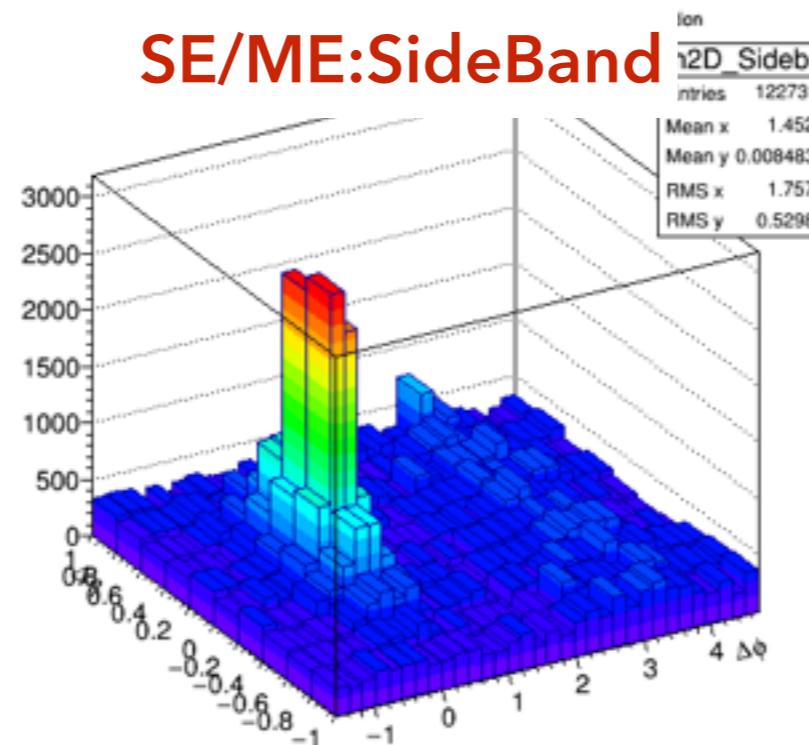
Old Macro

Low p_T (8-16 GeV/c)

SE/ME:S+B

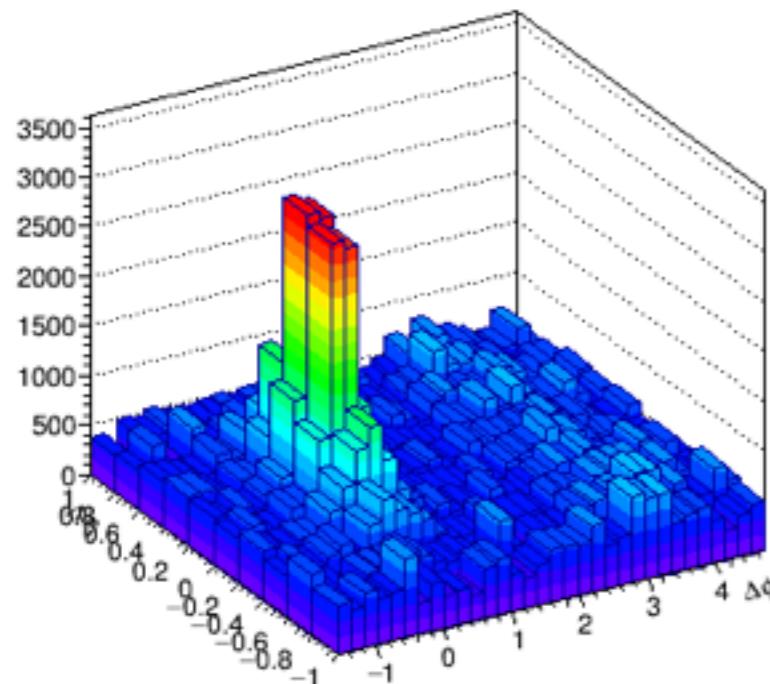


SE/ME:SideBand

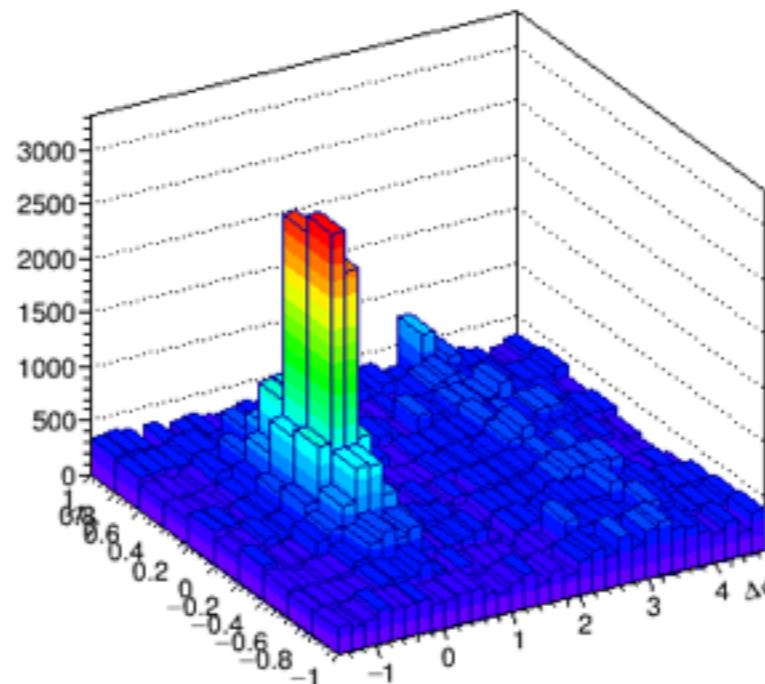


New Macro

SEbyME_2D_DPt8_16_SB_0.3to99.0

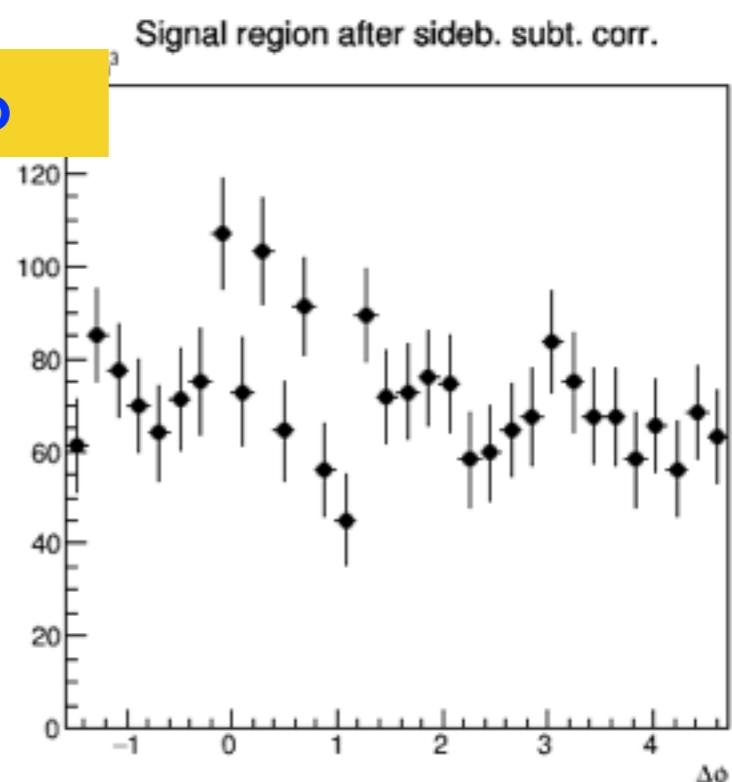
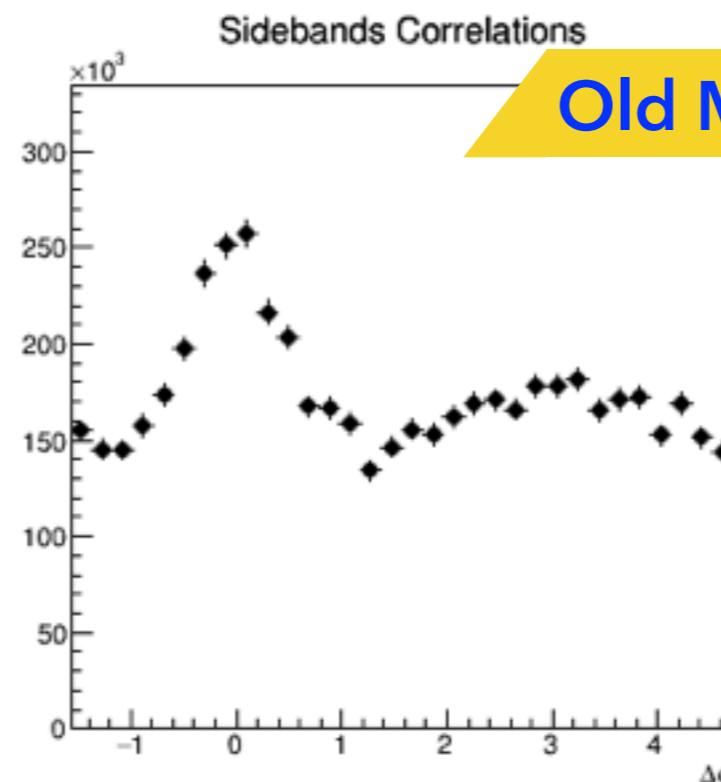
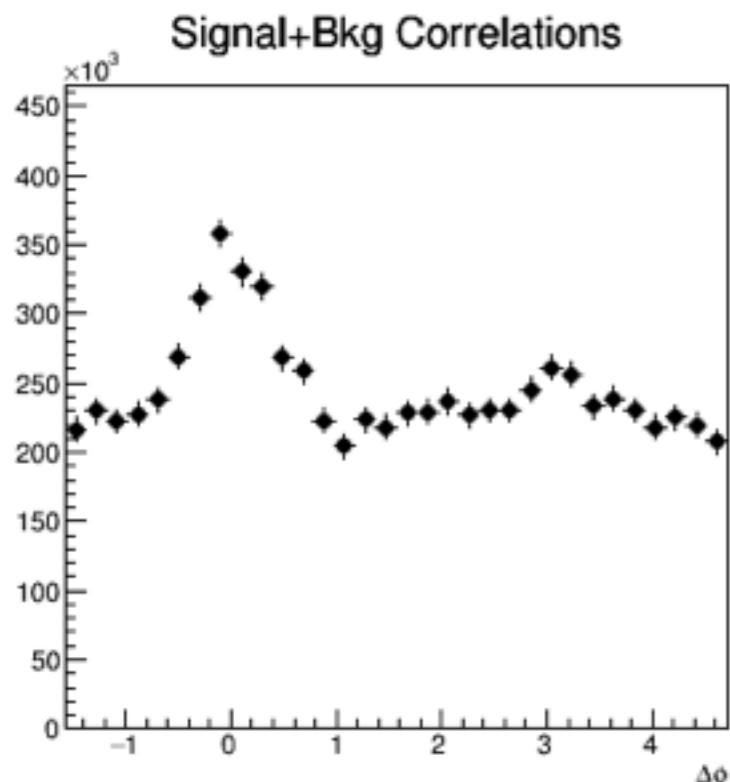
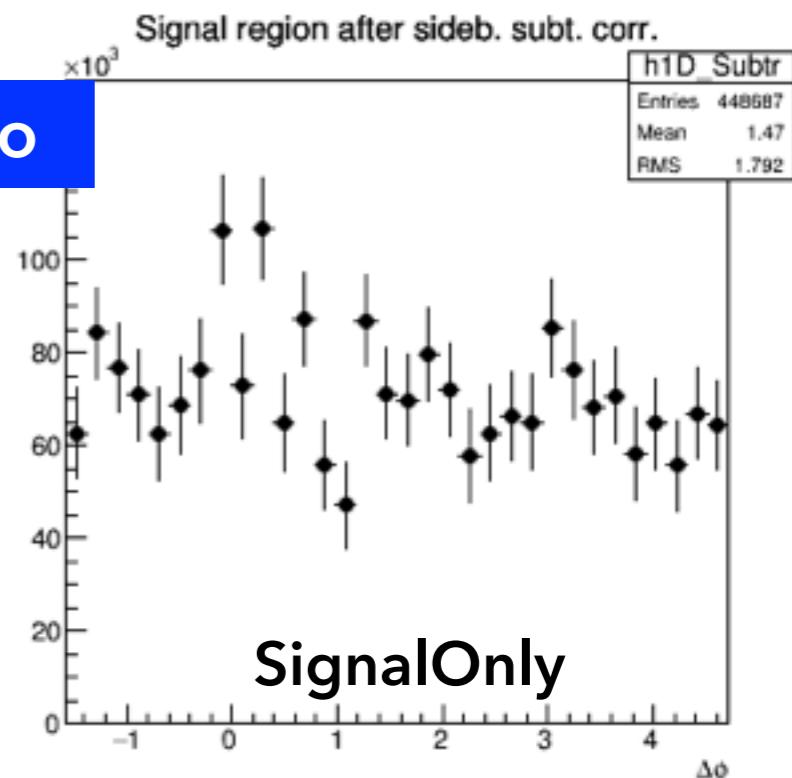
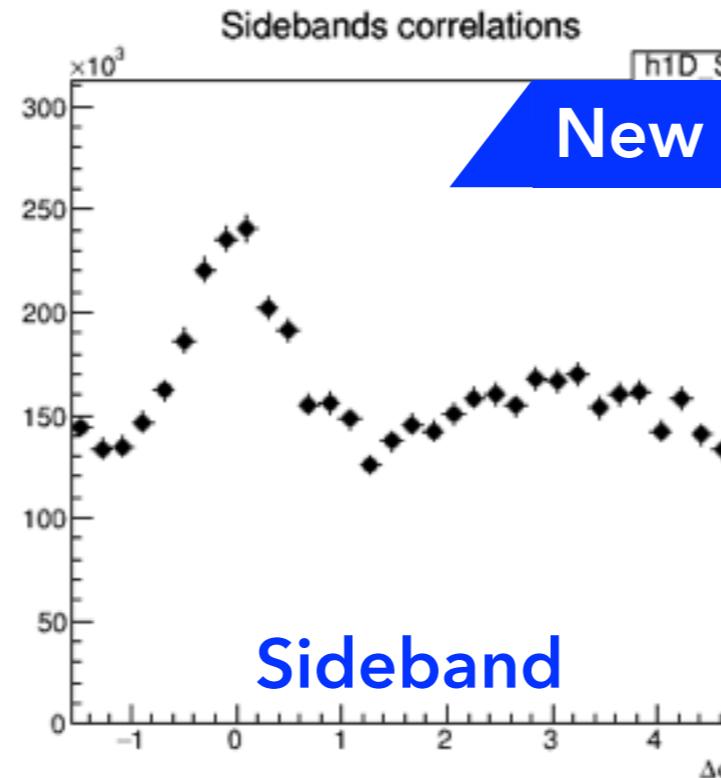
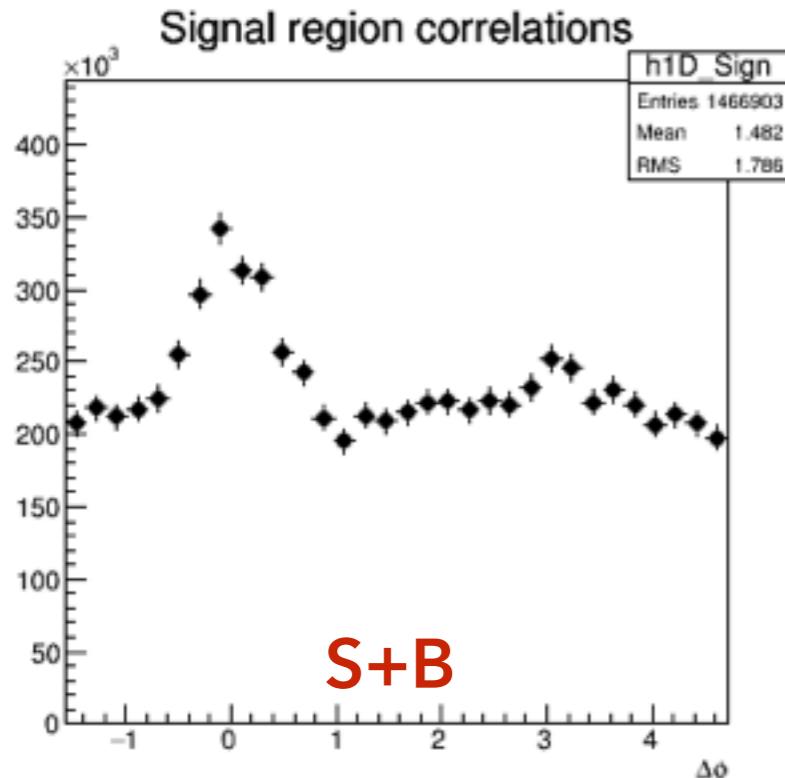


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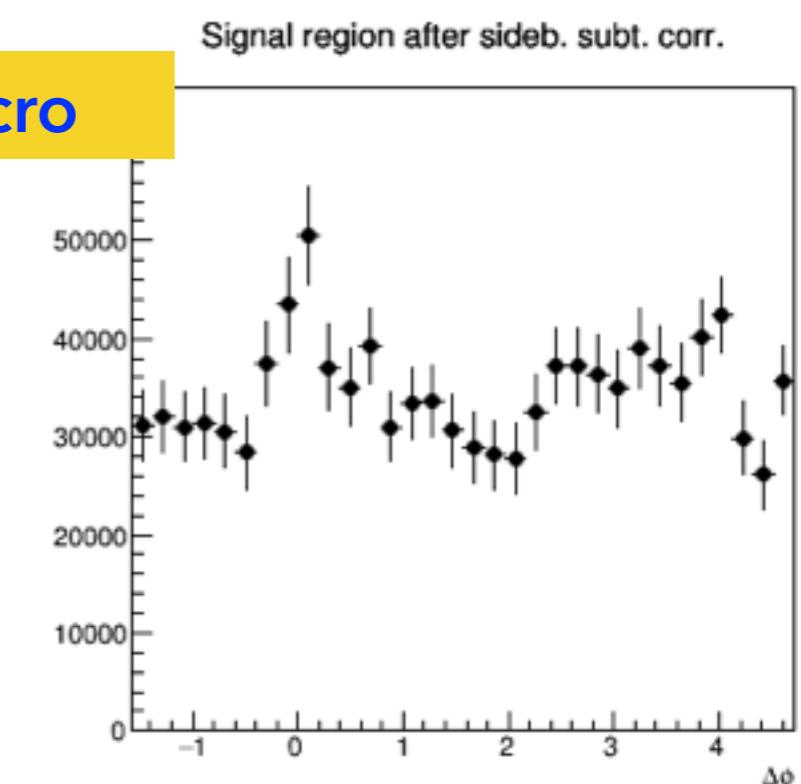
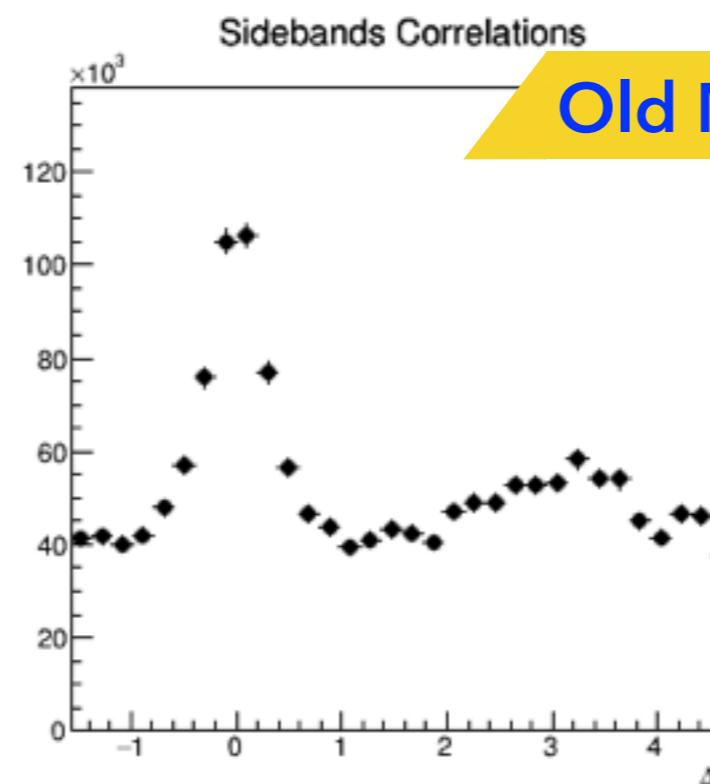
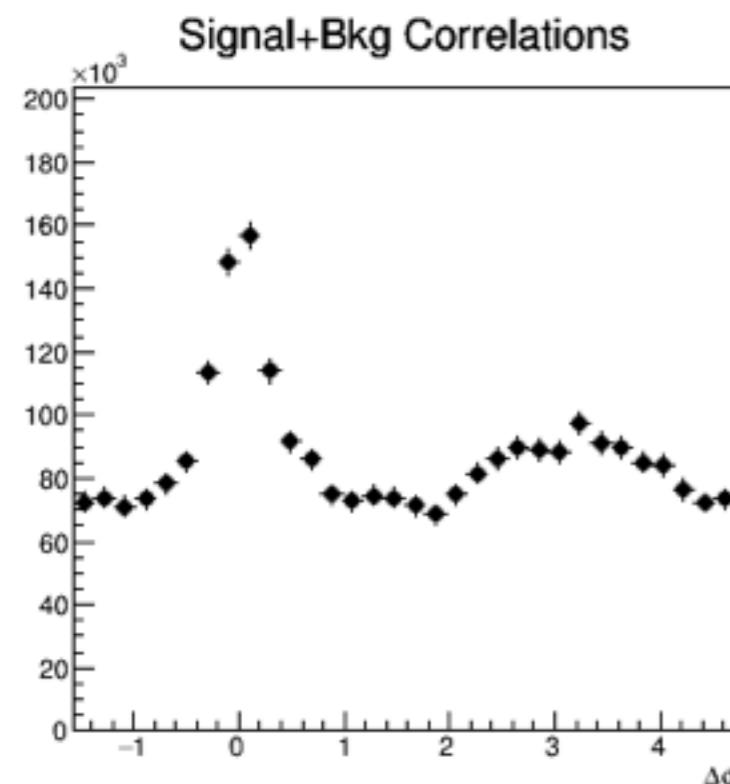
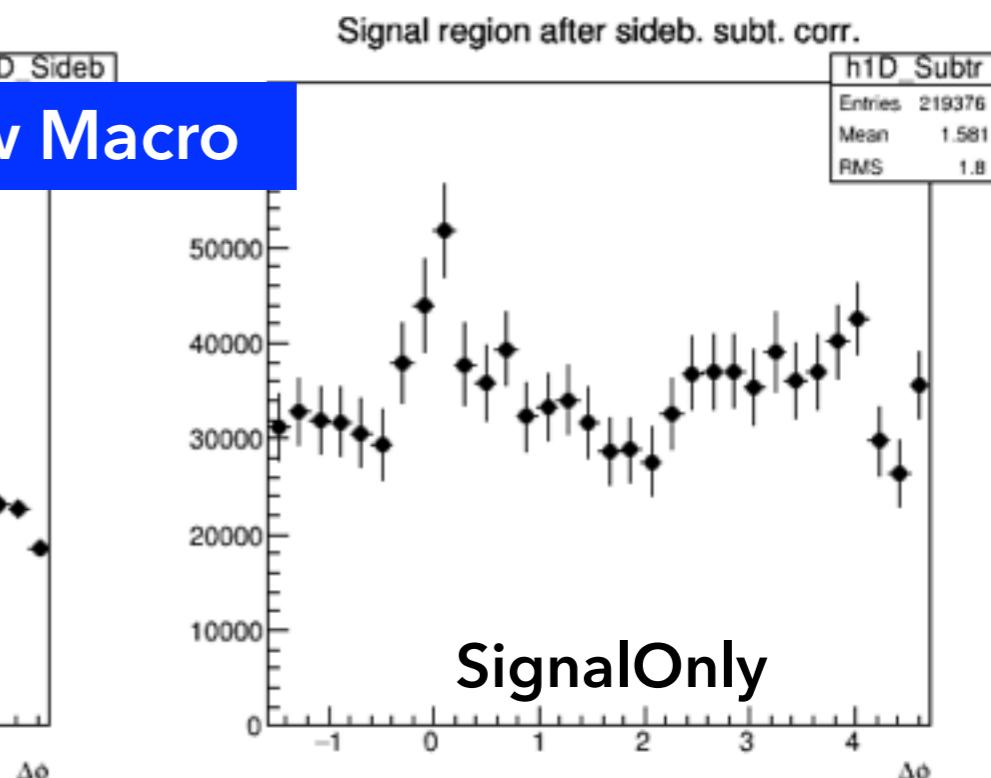
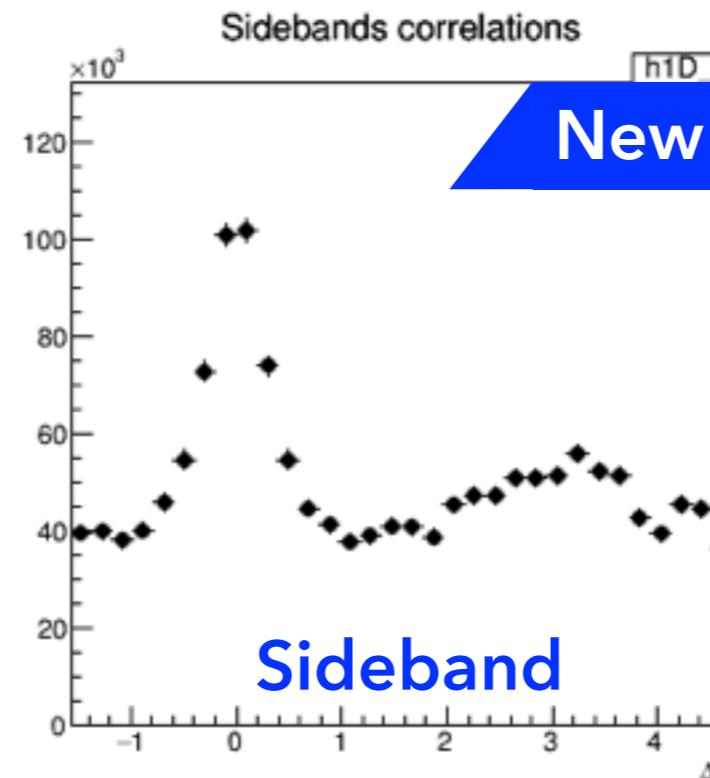
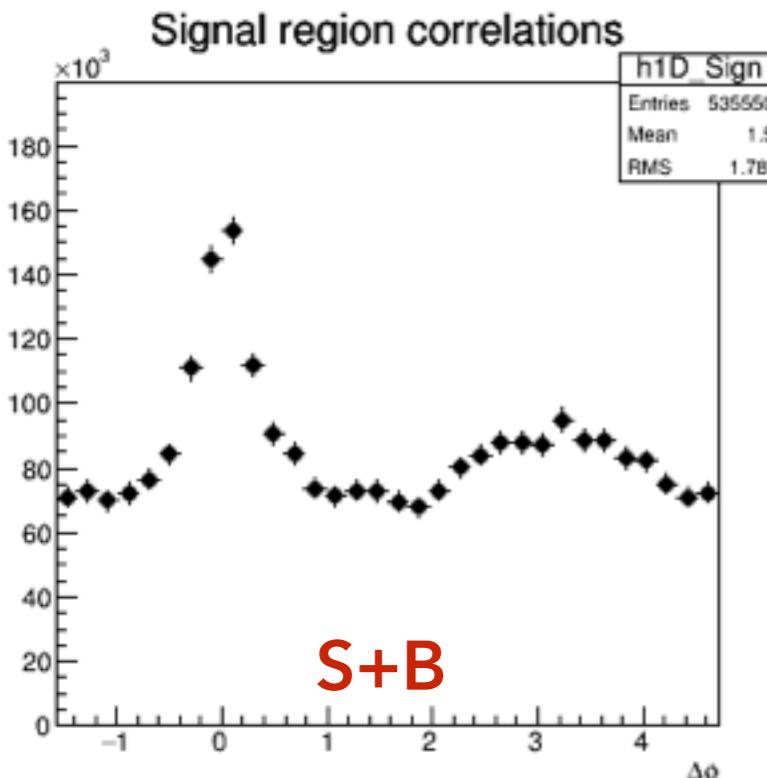


Old Macro

$D^+ p_T (3-5 \text{ GeV}/c)$



D⁺ p_T (5-8 GeV/c)

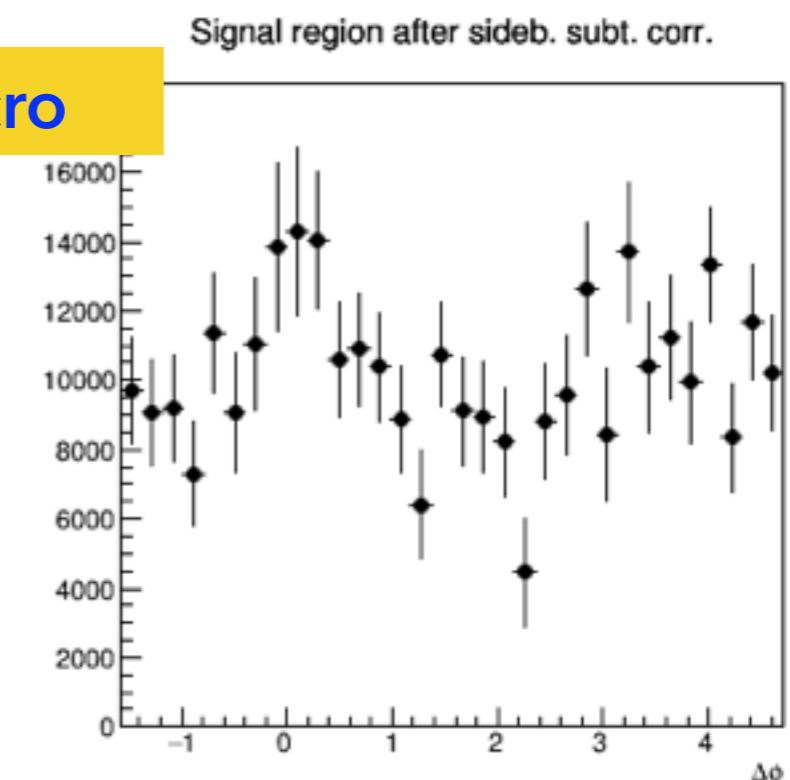
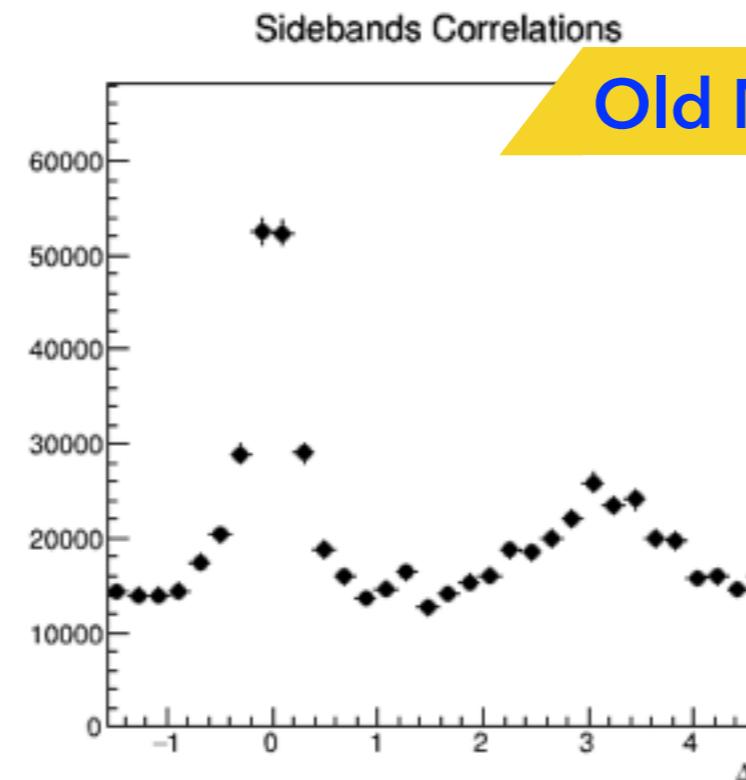
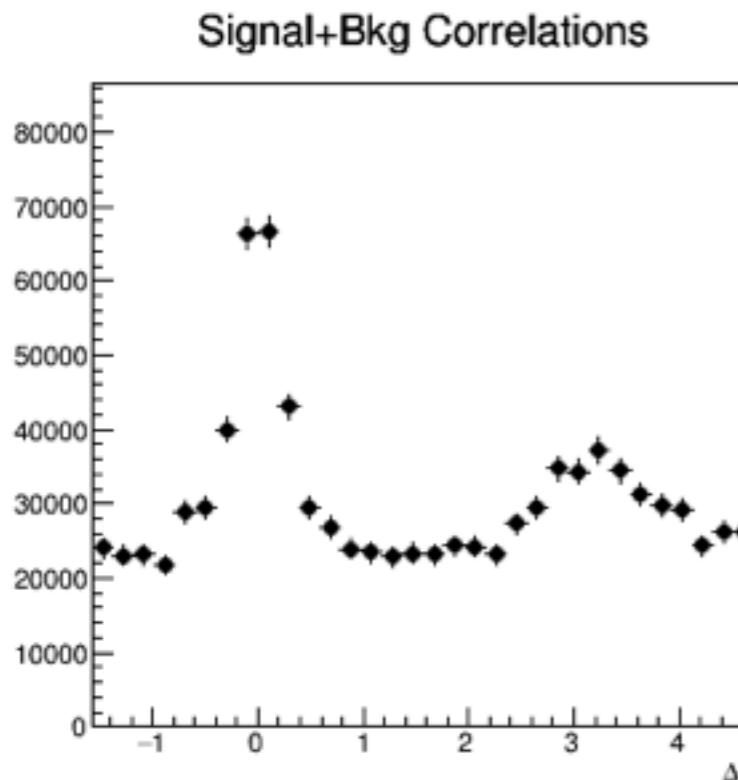
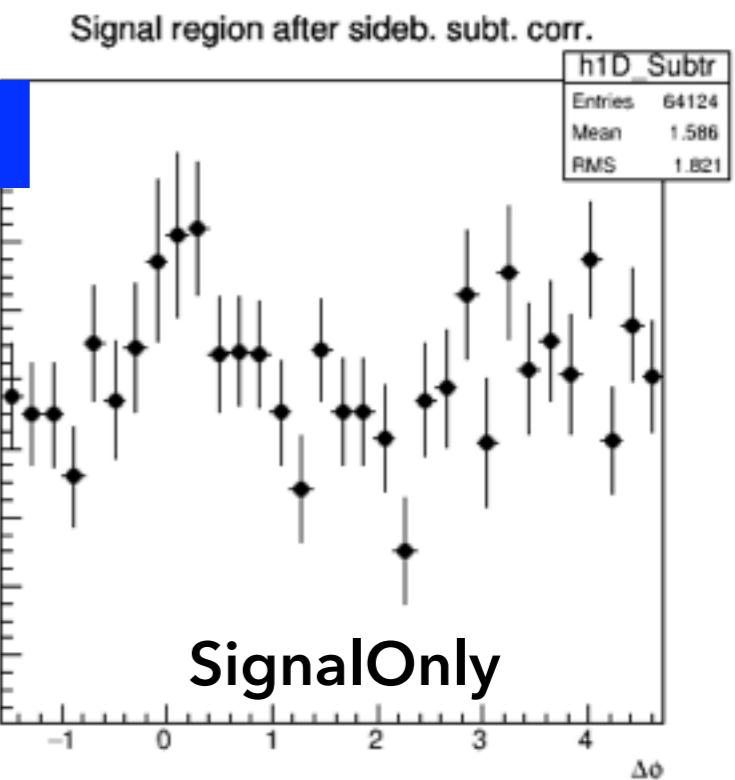
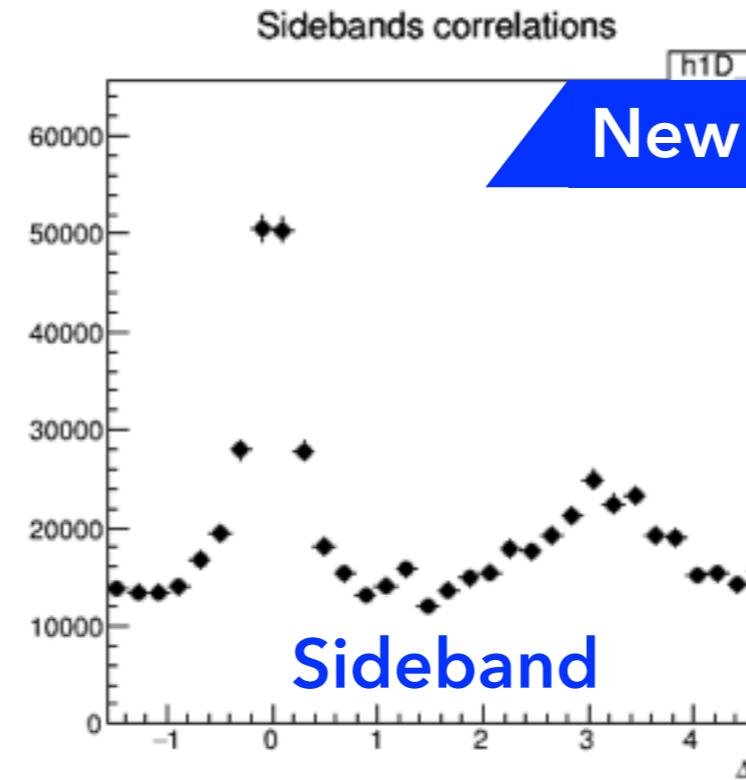
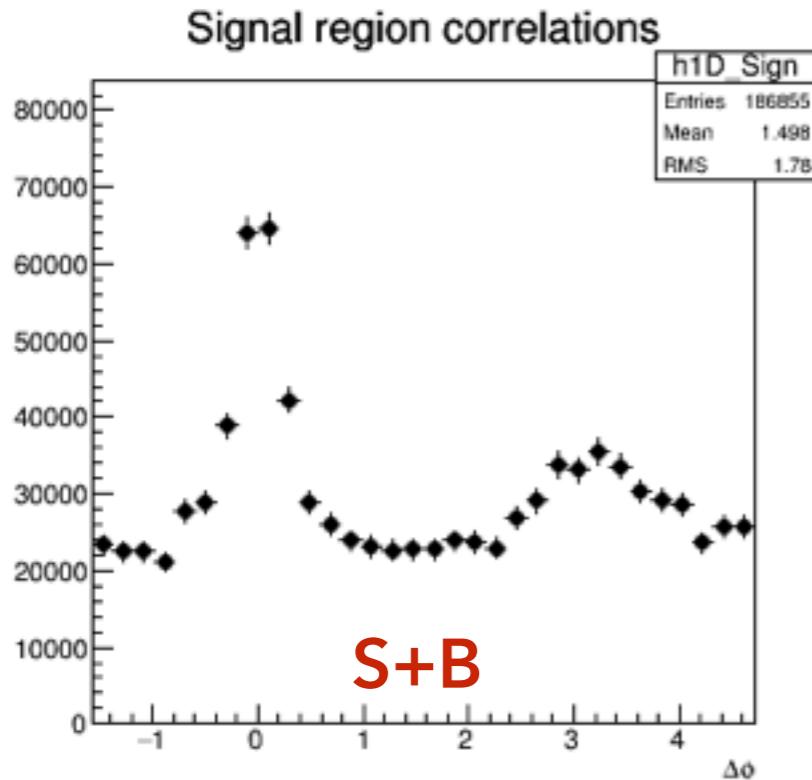


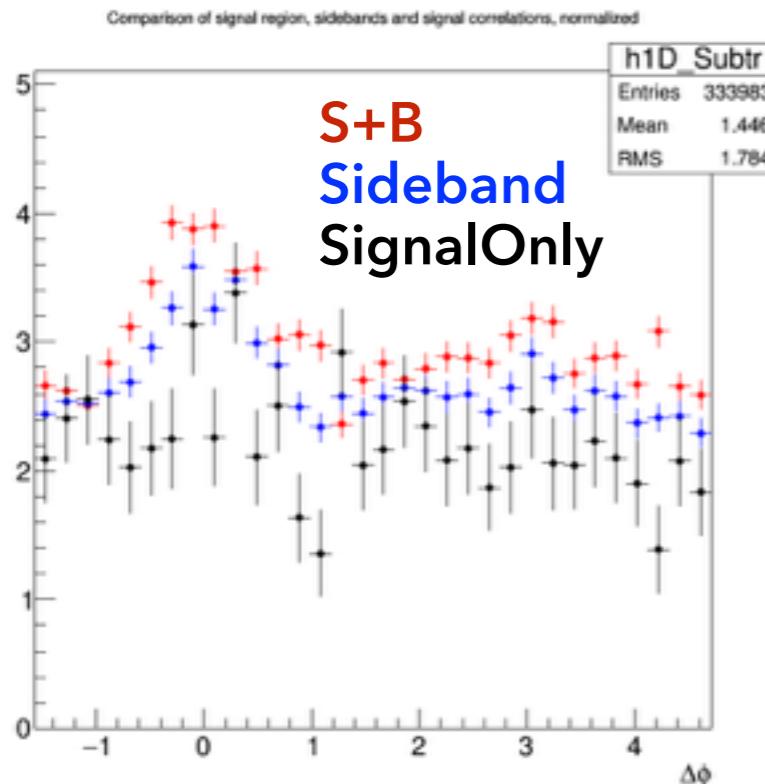
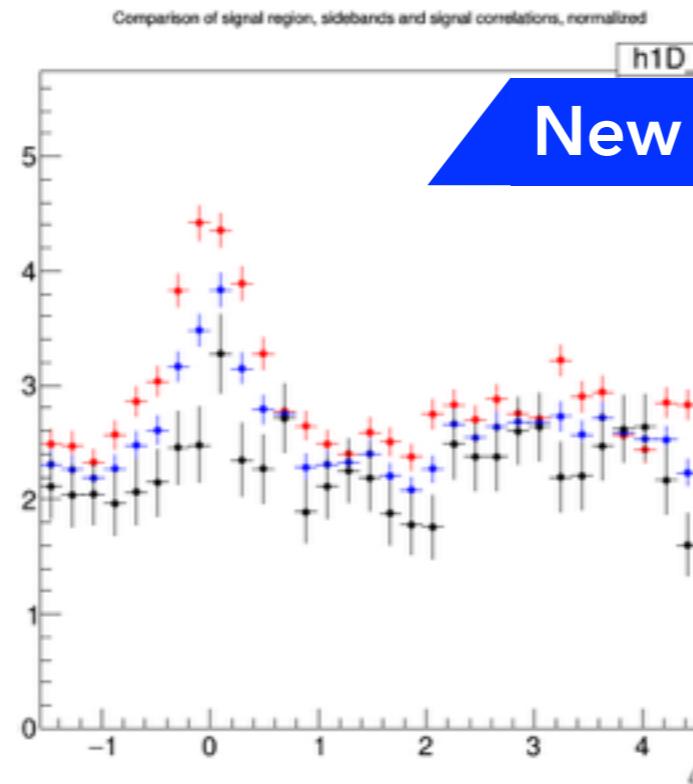
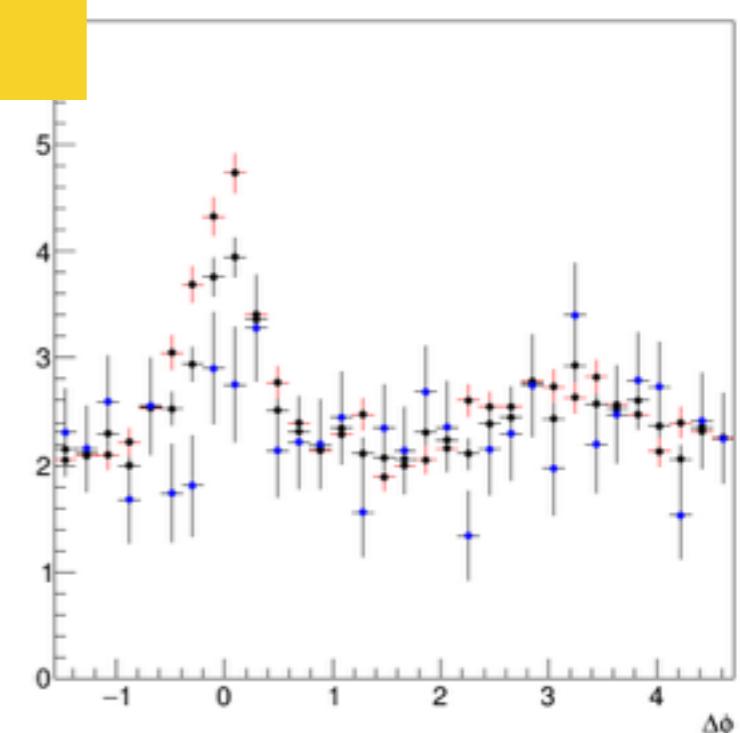
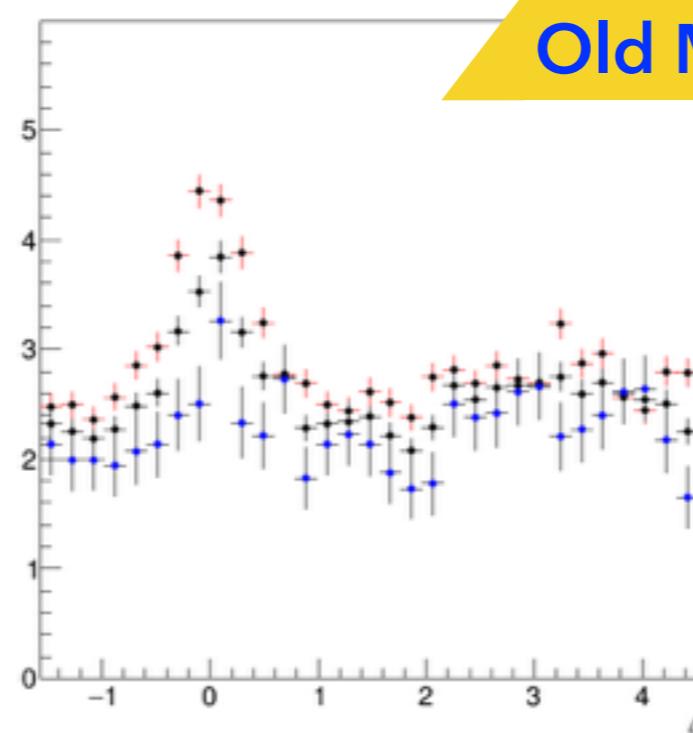
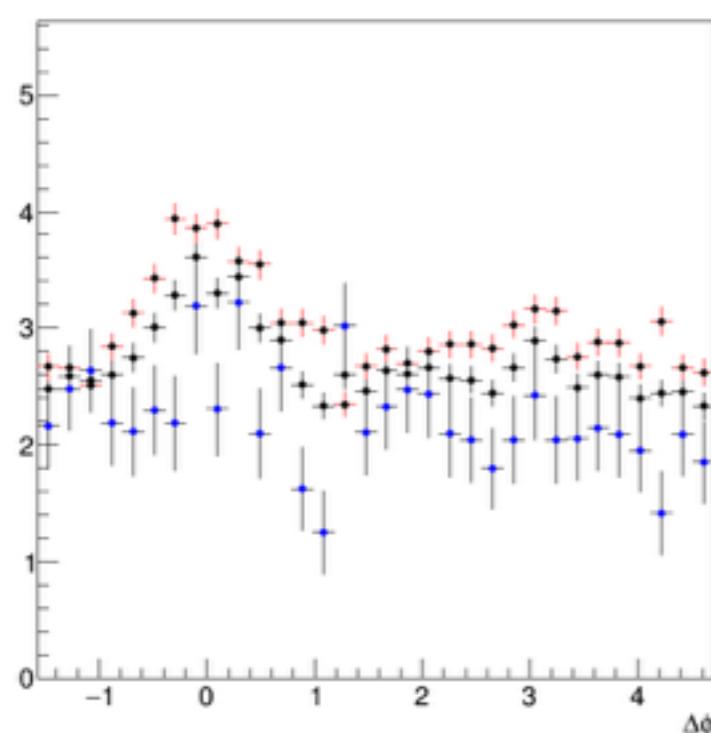
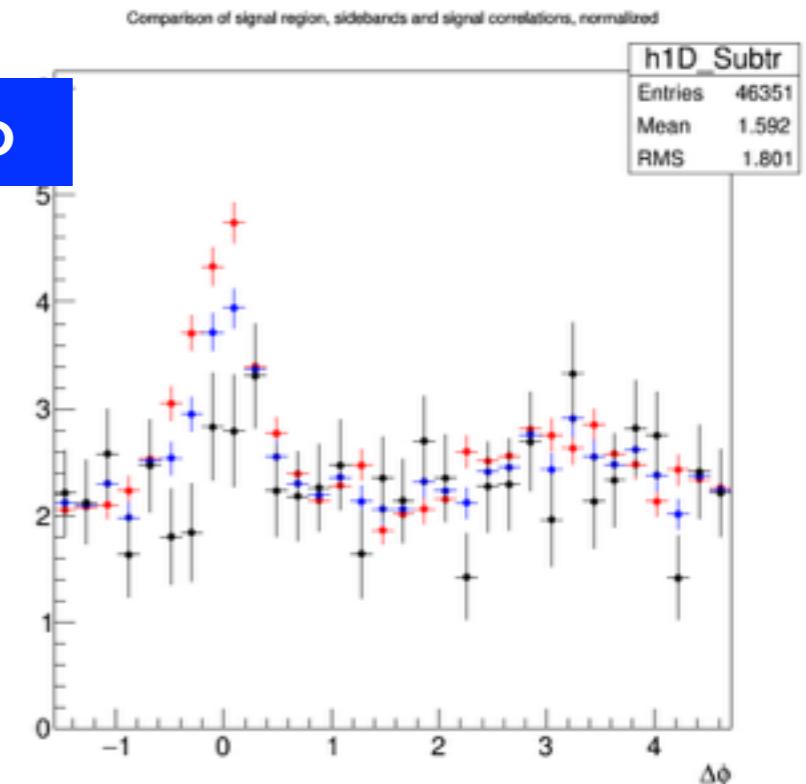
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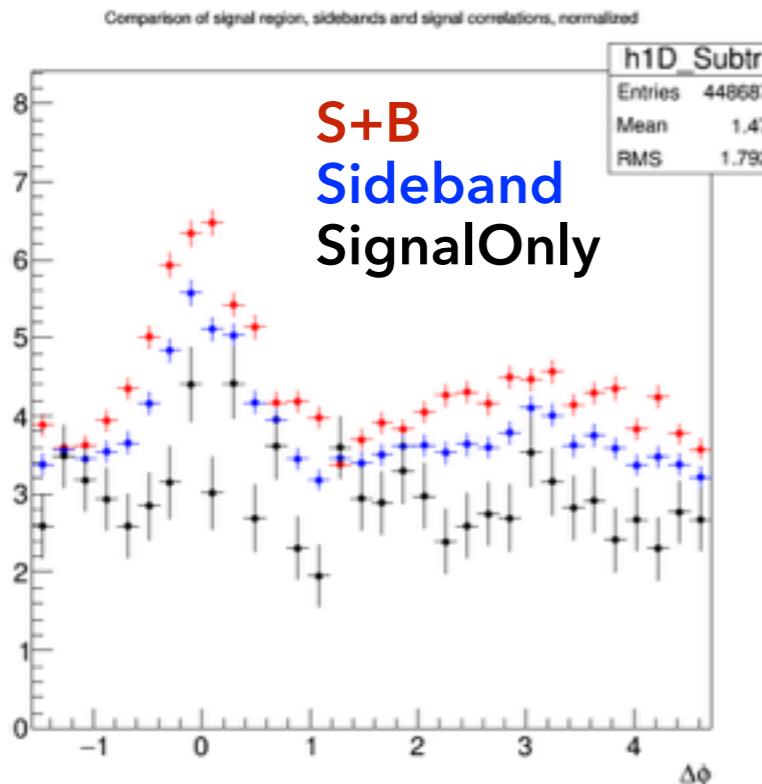
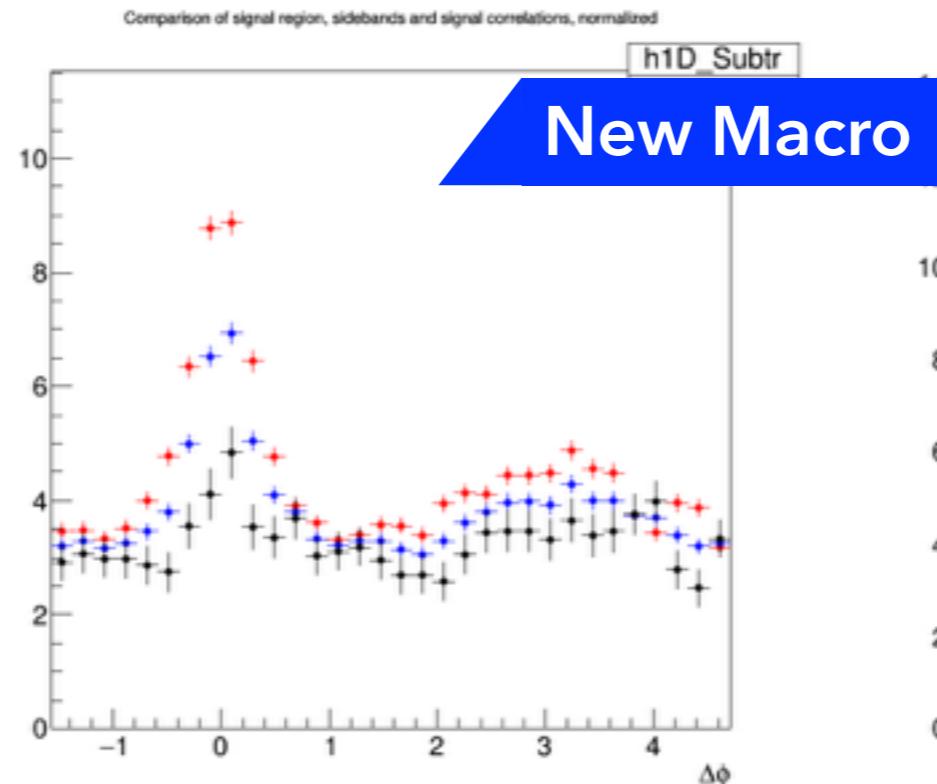
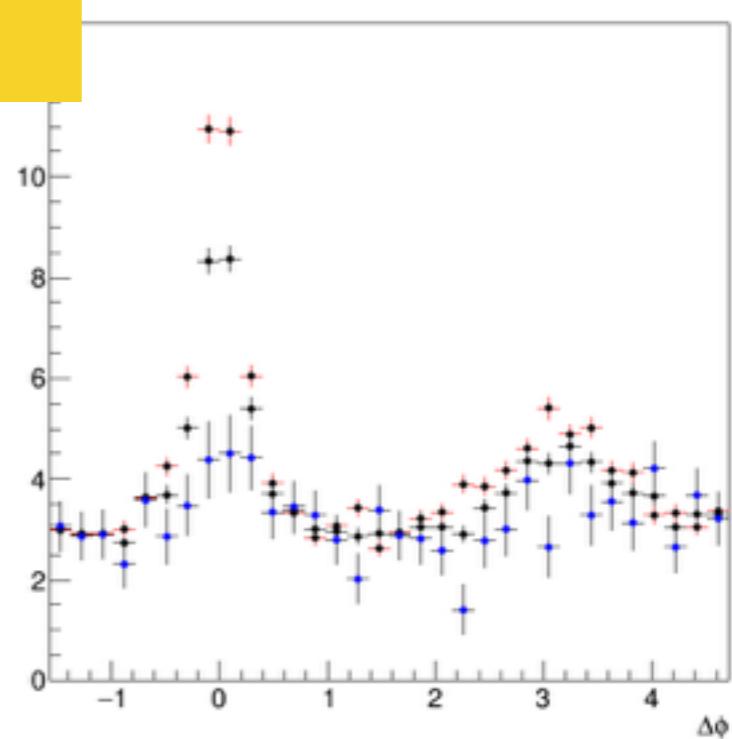
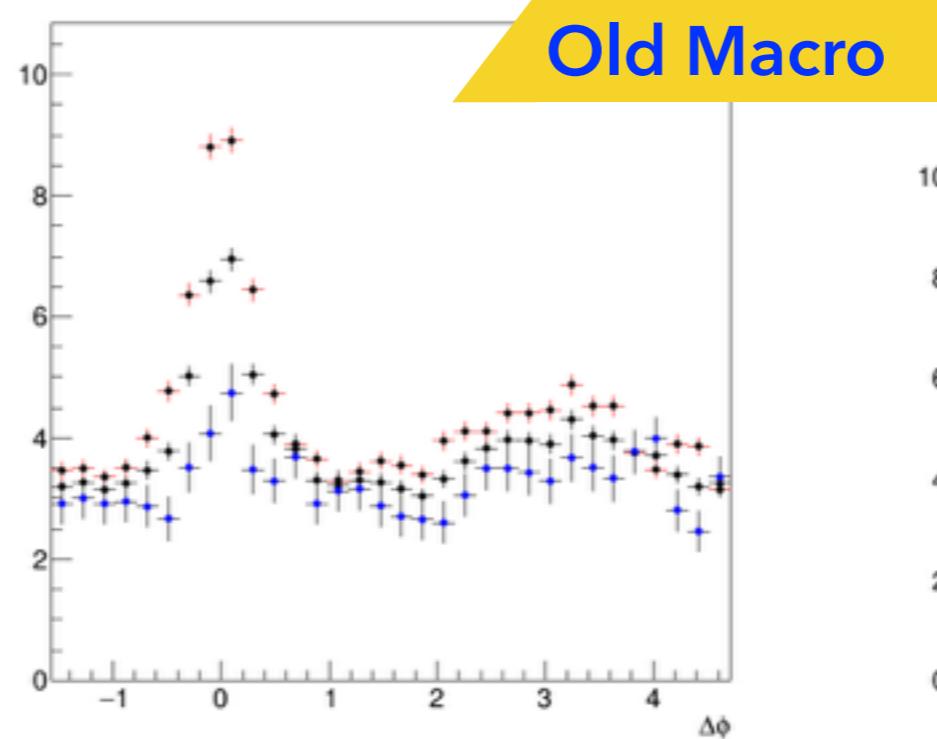
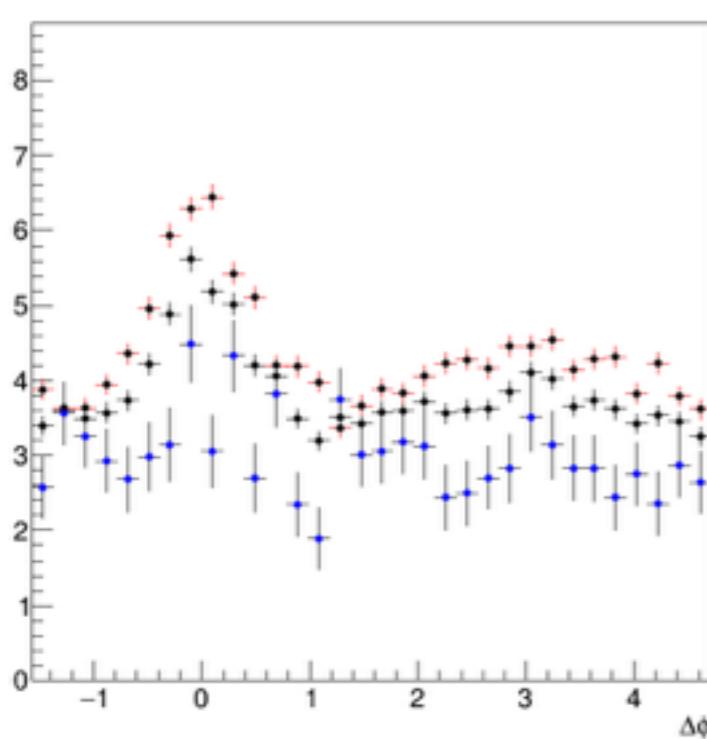
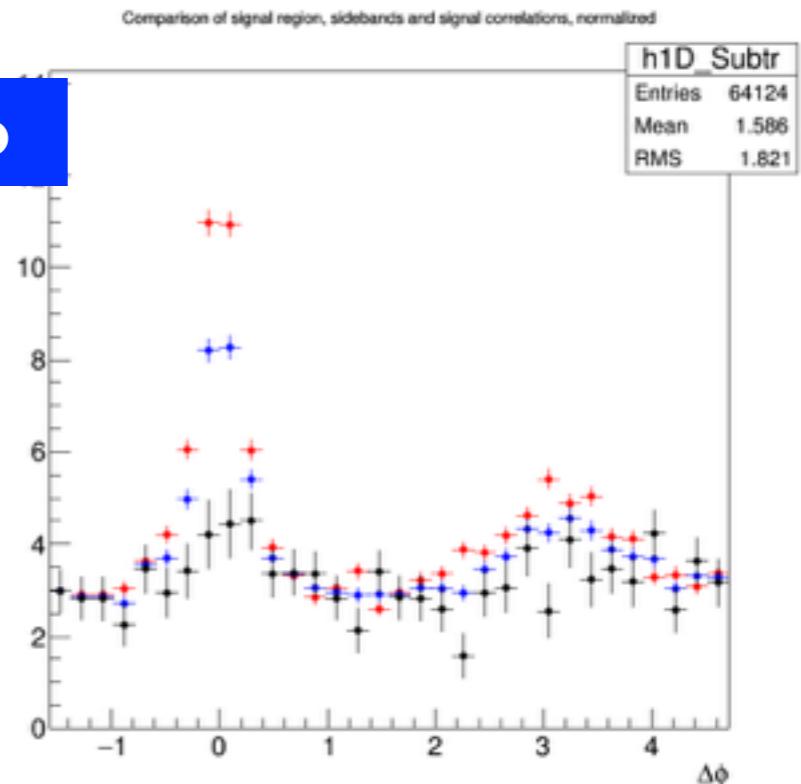
Detailed Plots (paper files pp)

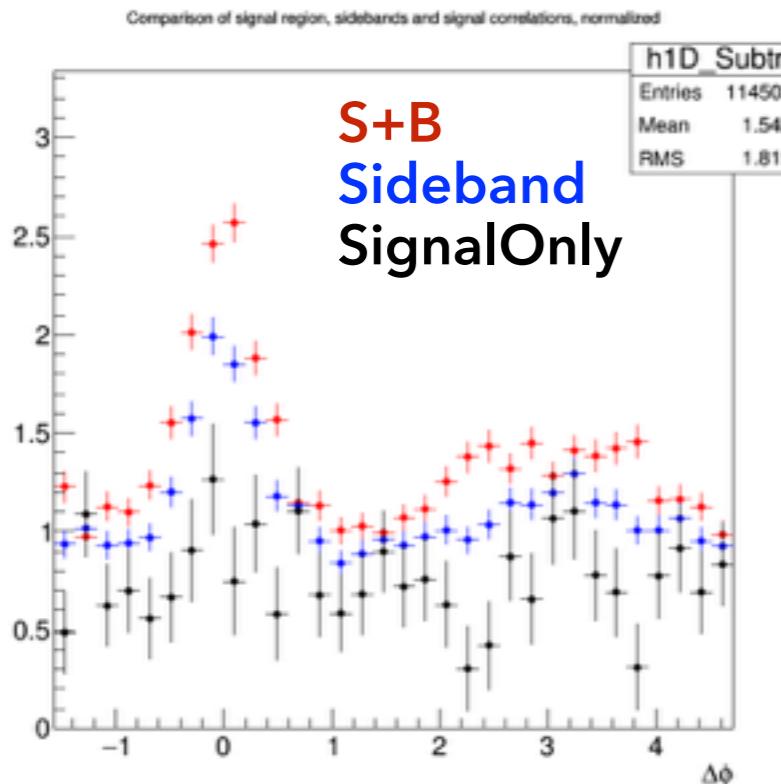
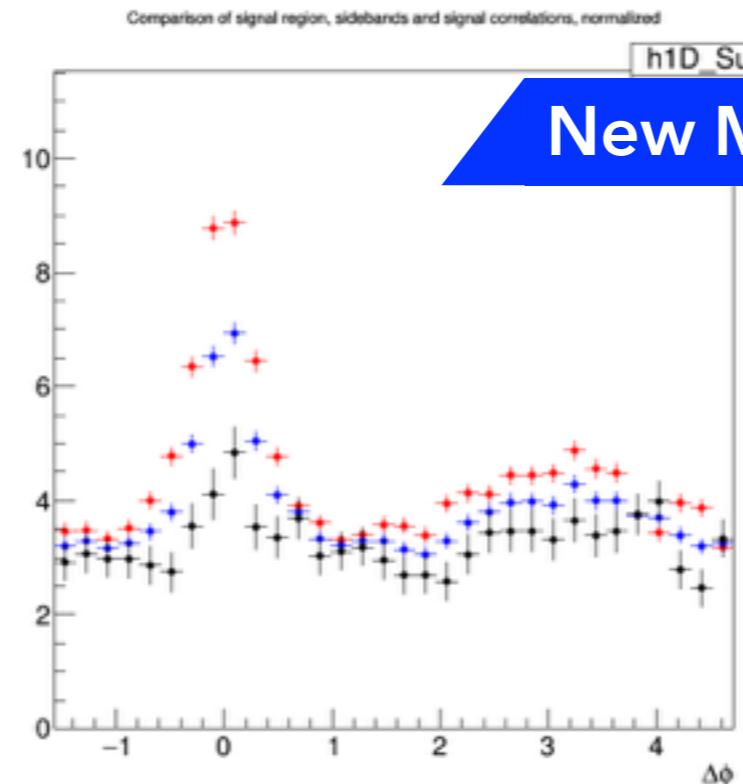
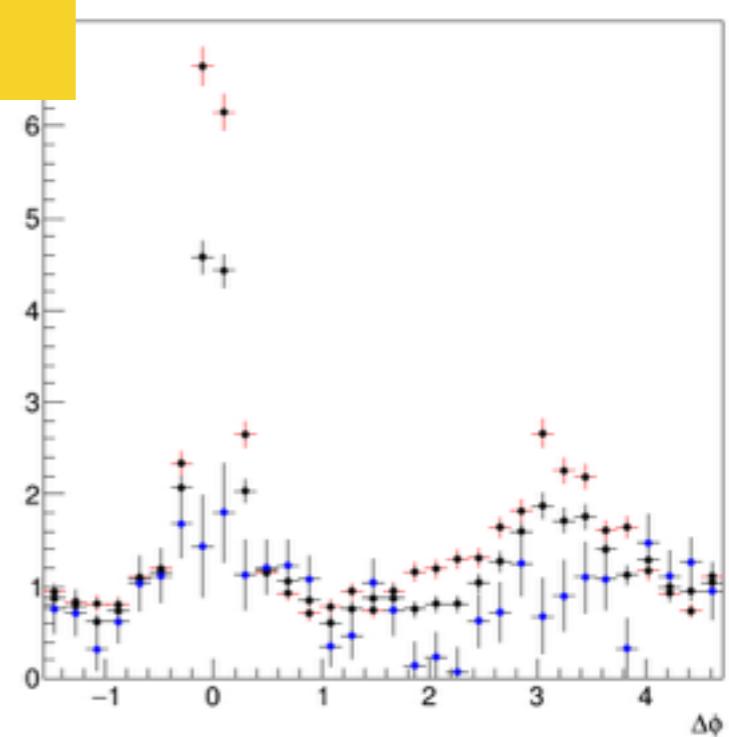
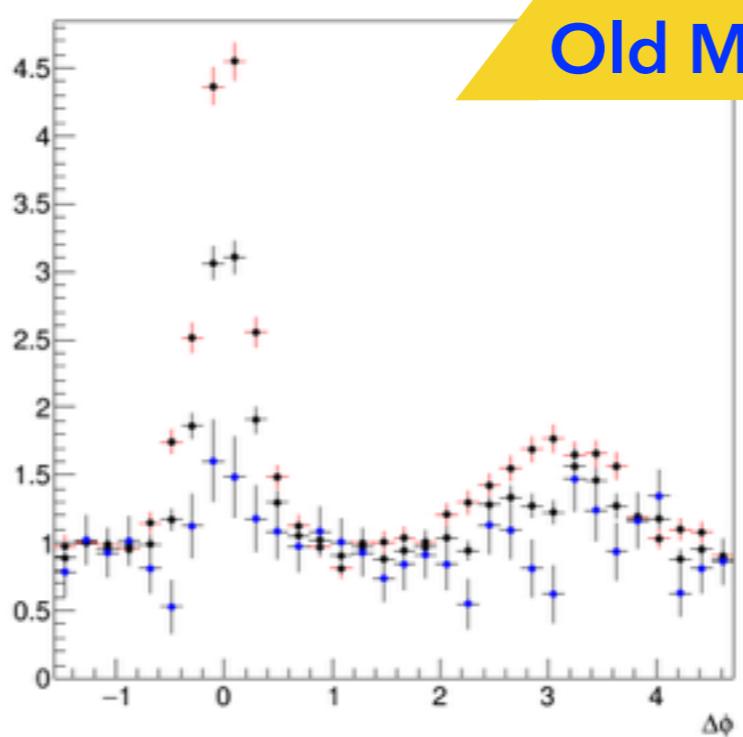
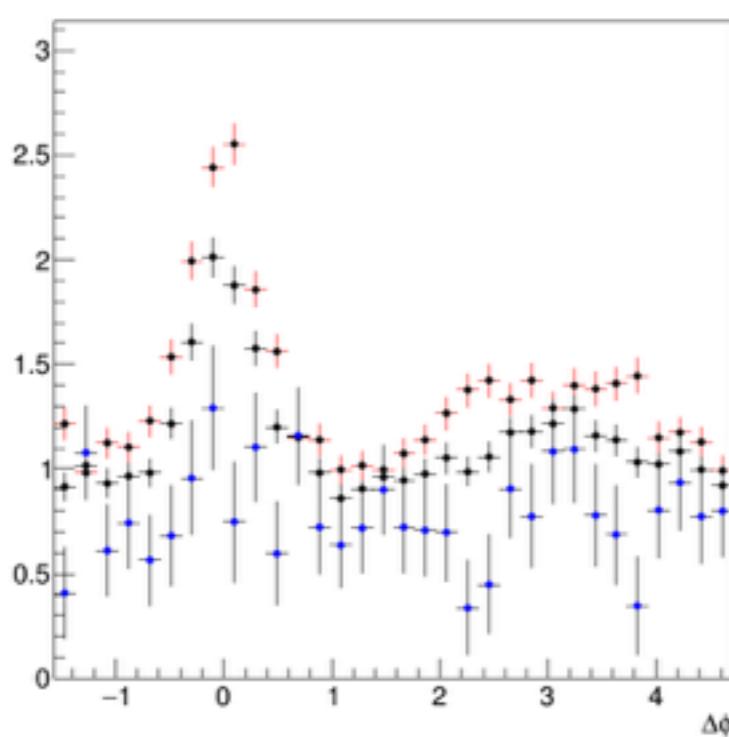
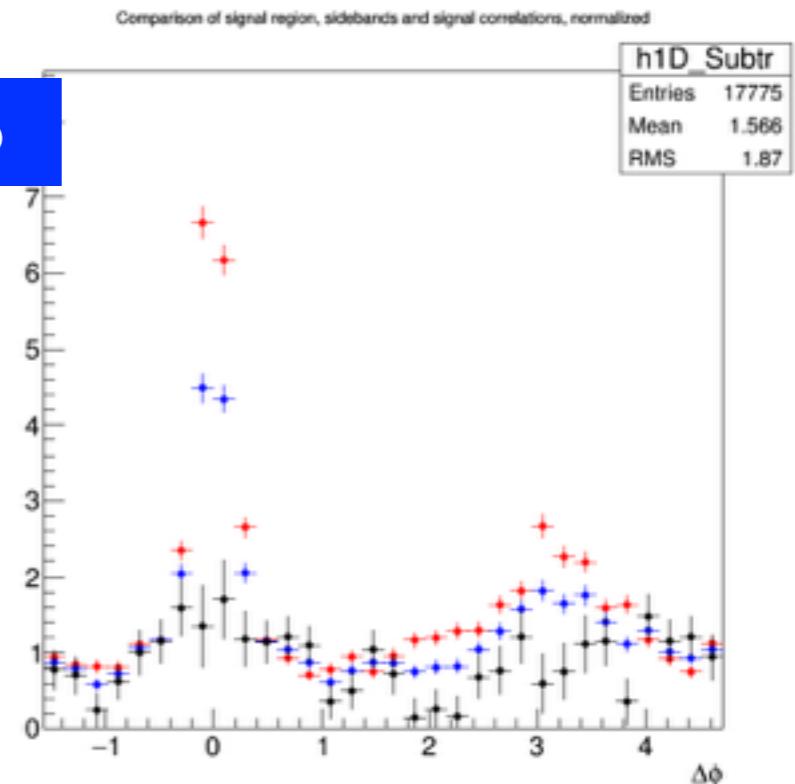
Asso $p_T > 0.3 \text{ GeV}/c$

$D^+ p_T (8-16 \text{ GeV}/c)$



Low p_T (3-5 GeV/c)Mid p_T (5-8 GeV/c)High p_T (8-16 GeV/c)

Low p_T (3-5 GeV/c)Mid p_T (5-8 GeV/c)High p_T (8-16 GeV/c)

Low p_T (3-5 GeV/c)**Mid p_T (5-8 GeV/c)****High p_T (8-16 GeV/c)**

Thanks !