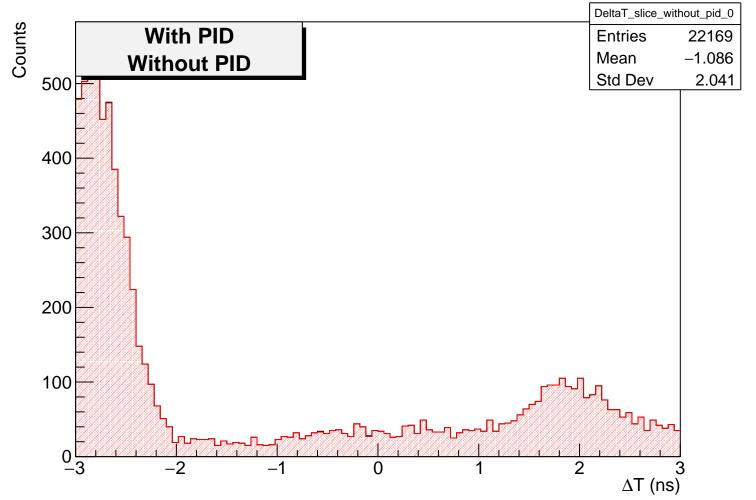
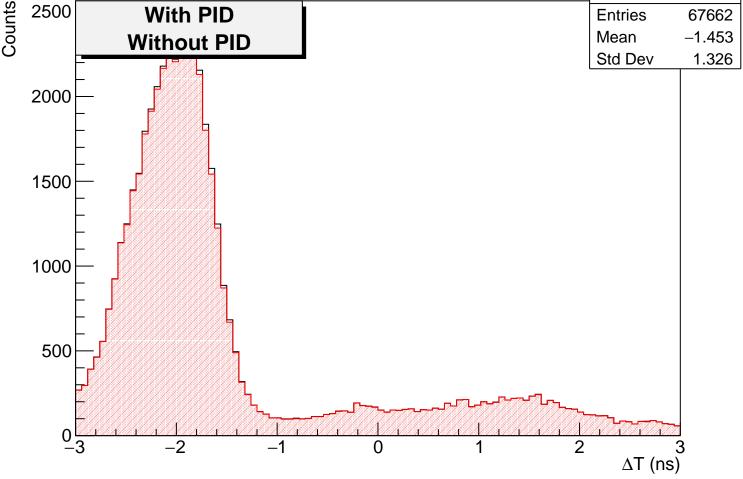
Momentum range [0.20, 0.25] GeV (Without PID)

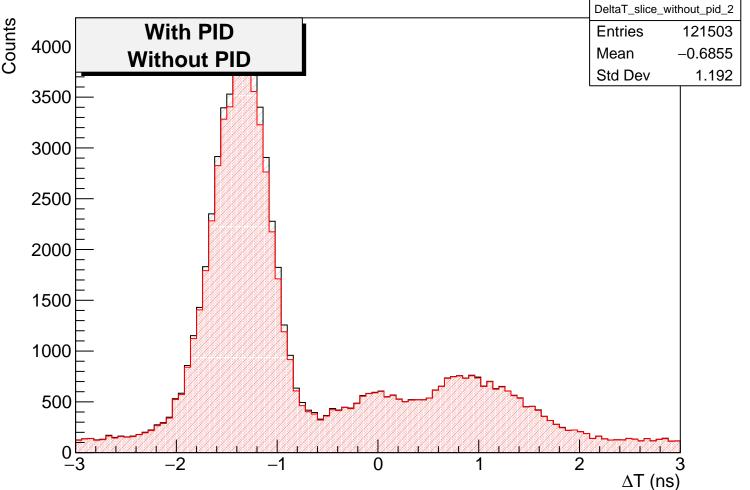


Momentum range [0.25, 0.30] GeV (Without PID) DeltaT_slice_without_pid_1 With PID **Entries** 67662 Mean -1.453**Without PID** Std Dev 1.326

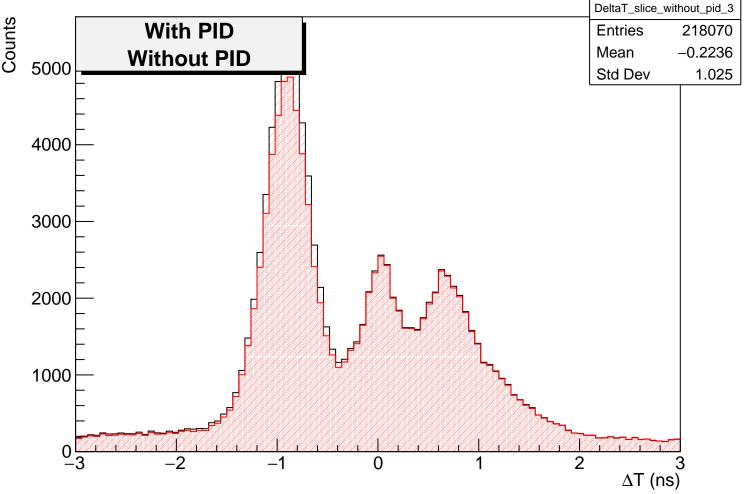


2500

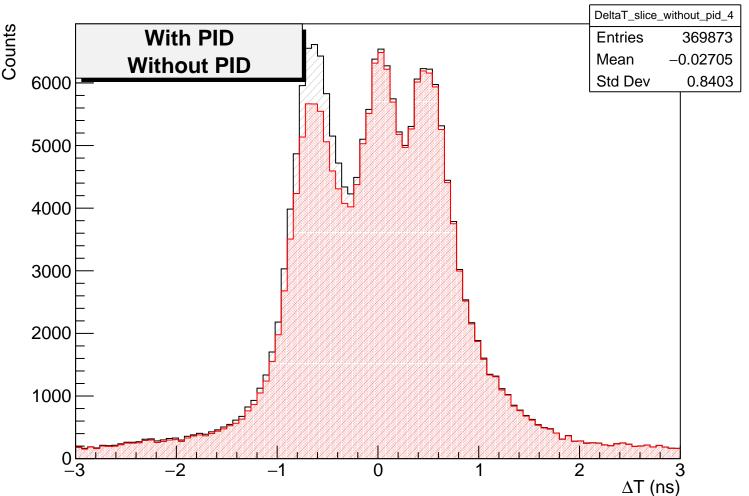
Momentum range [0.30, 0.35] GeV (Without PID)



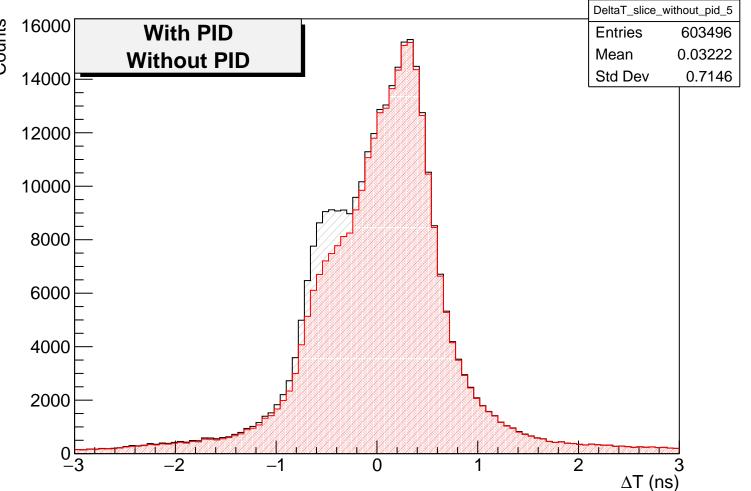
Momentum range [0.35, 0.40] GeV (Without PID)



Momentum range [0.40, 0.45] GeV (Without PID)



Momentum range [0.45, 0.50] GeV (Without PID)

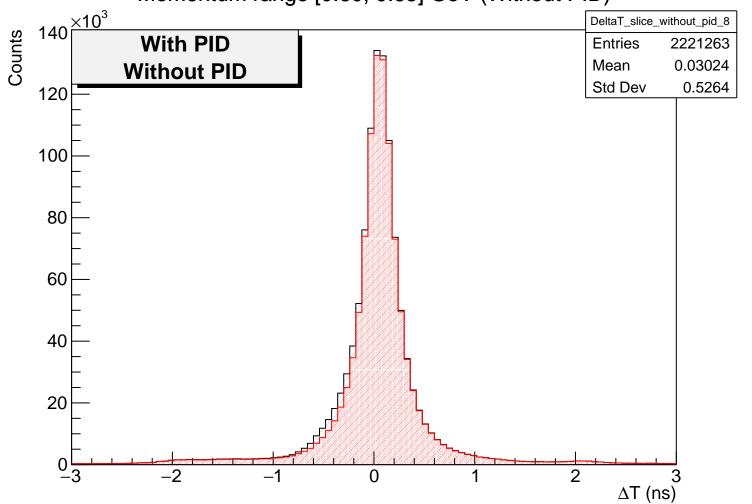


Momentum range [0.50, 0.55] GeV (Without PID) DeltaT_slice_without_pid_6 40000 With PID **Entries** 994621 0.05753 Mean Without PID 35000 Std Dev 0.6153 30000 25000 20000 15000 10000 5000 ΔT (ns)

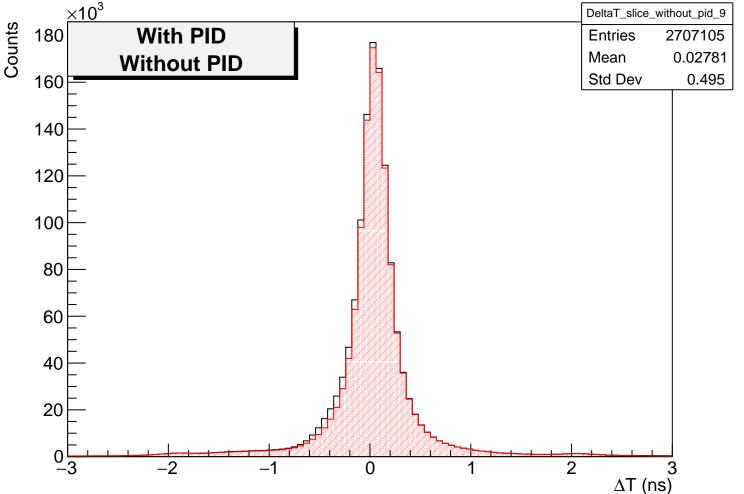
Momentum range [0.55, 0.60] GeV (Without PID) DeltaT_slice_without_pid_7 With PID **Entries** 1525060 80000 Mean 0.04371 **Without PID** Std Dev 0.556 70000 60000 50000 40000 30000 20000 10000

 ΔT (ns)

Momentum range [0.60, 0.65] GeV (Without PID)



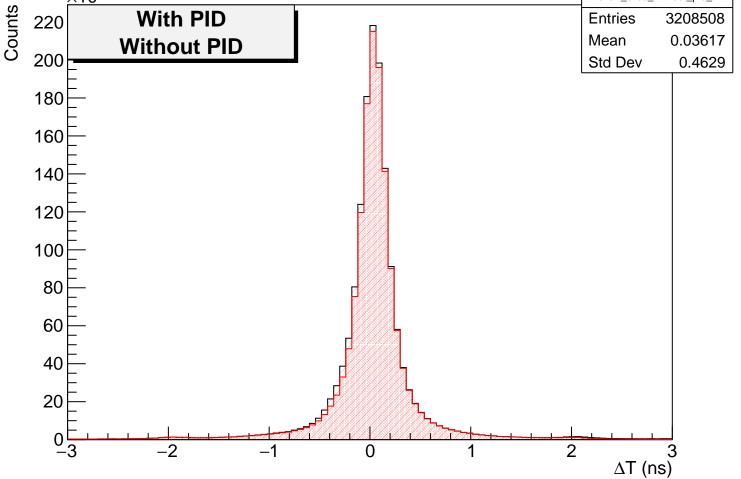
Momentum range [0.65, 0.70] GeV (Without PID)



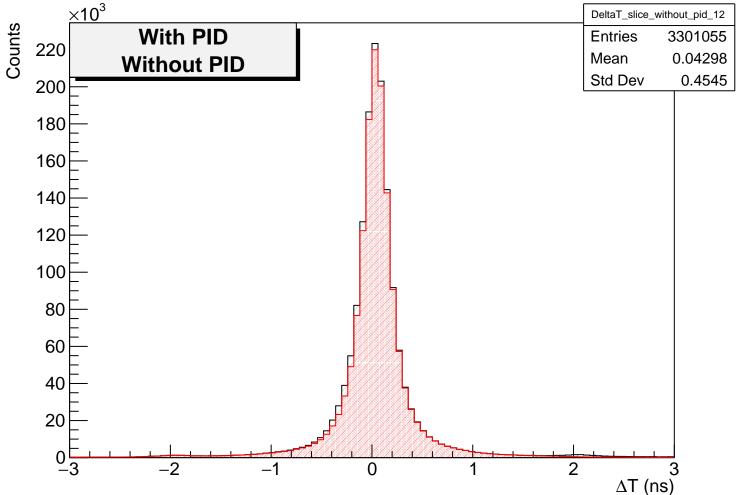
Momentum range [0.70, 0.75] GeV (Without PID) $\times 10^3$ DeltaT_slice_without_pid_10 Counts With PID **Entries** 3004530 200 Mean 0.03321 **Without PID** Std Dev 0.4739 180 160 140 120 100 80 60 40 20 05

 ΔT (ns)

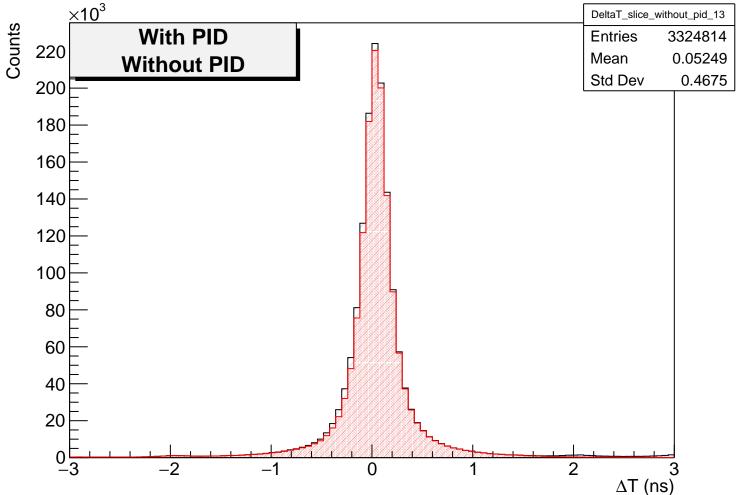
Momentum range [0.75, 0.80] GeV (Without PID) $\times 10^3$ DeltaT_slice_without_pid_11 With PID **Entries** 3208508 Mean 0.03617 Without PID Std Dev 0.4629



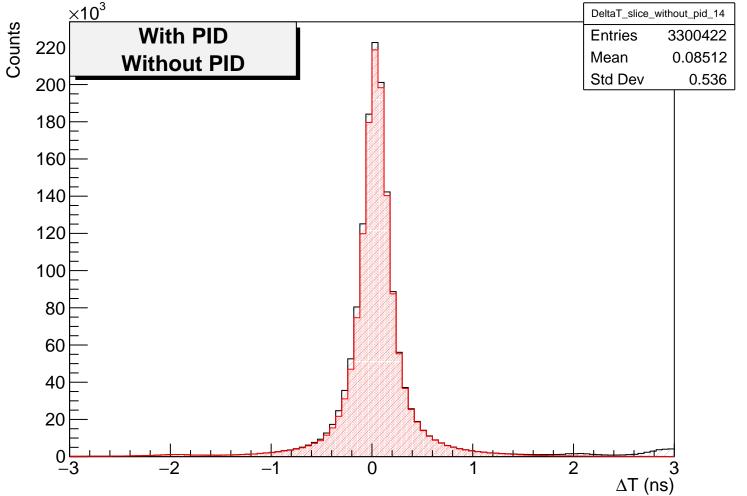
Momentum range [0.80, 0.85] GeV (Without PID)



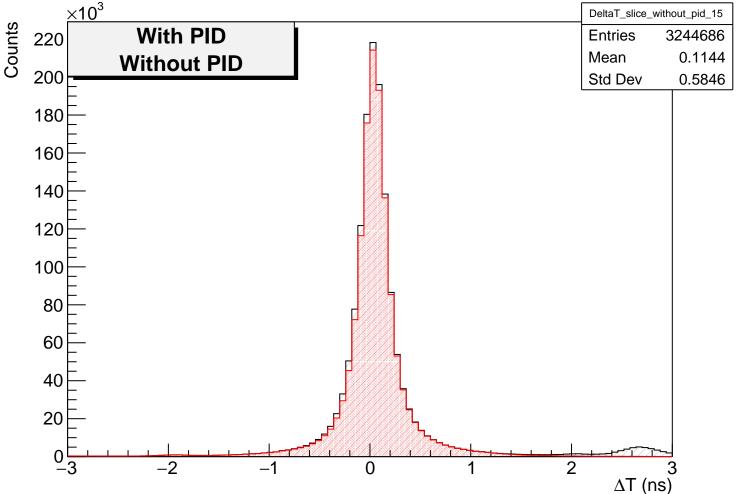
Momentum range [0.85, 0.90] GeV (Without PID)



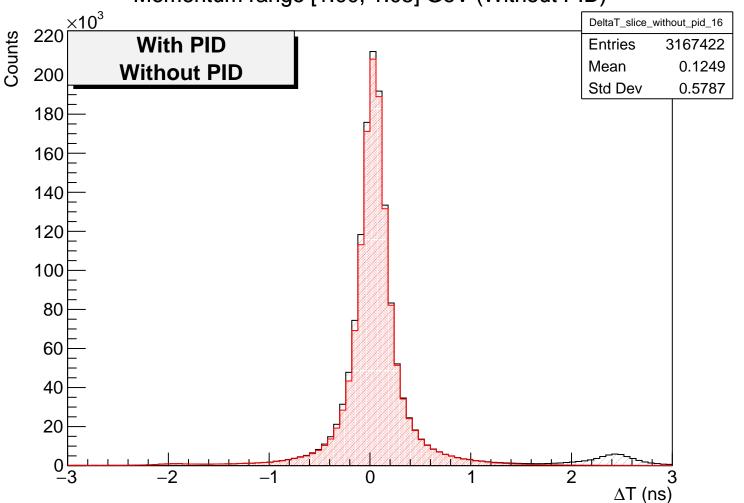
Momentum range [0.90, 0.95] GeV (Without PID)



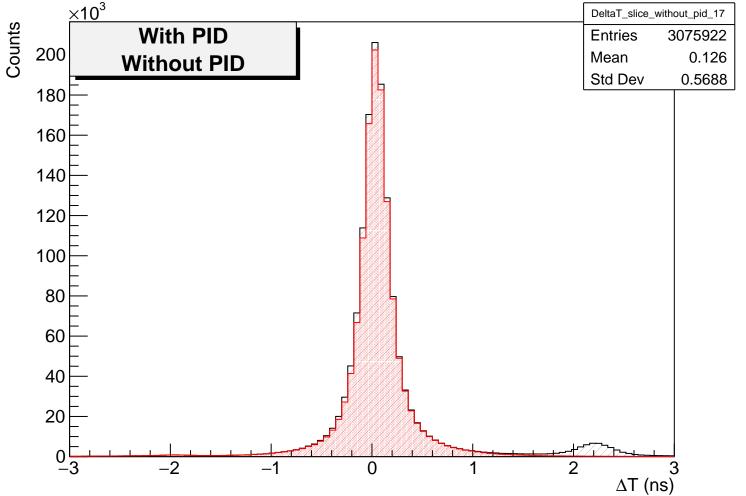
Momentum range [0.95, 1.00] GeV (Without PID)



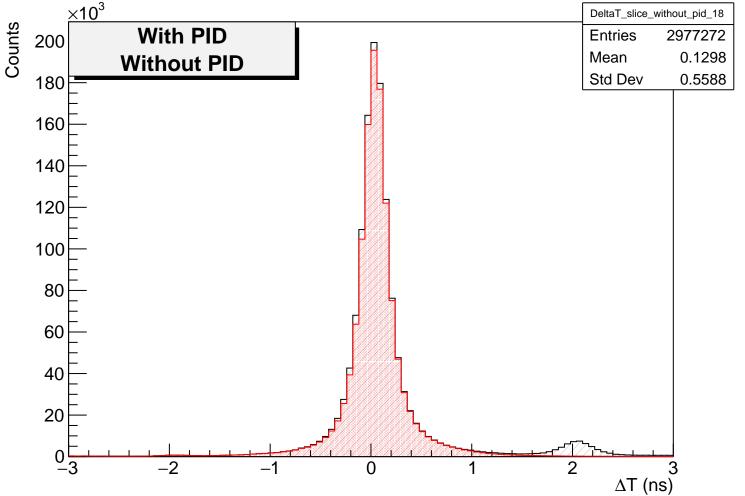
Momentum range [1.00, 1.05] GeV (Without PID)



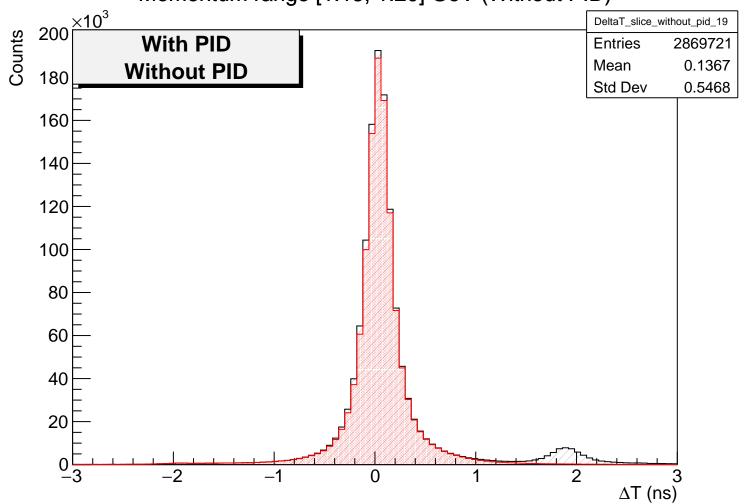
Momentum range [1.05, 1.10] GeV (Without PID)



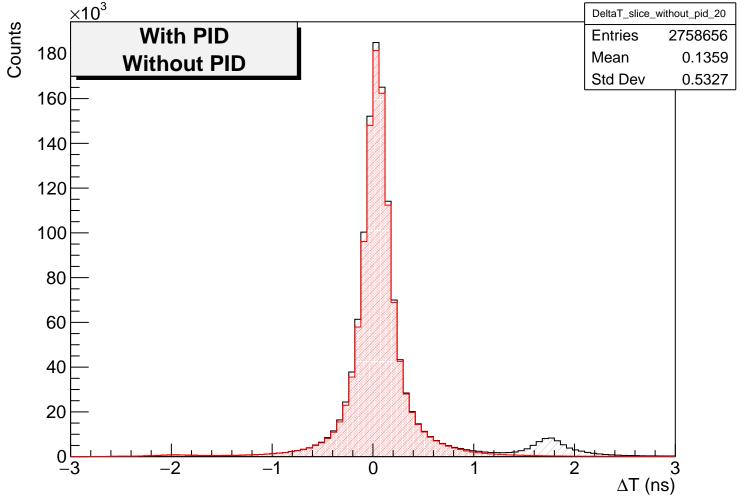
Momentum range [1.10, 1.15] GeV (Without PID)



Momentum range [1.15, 1.20] GeV (Without PID)



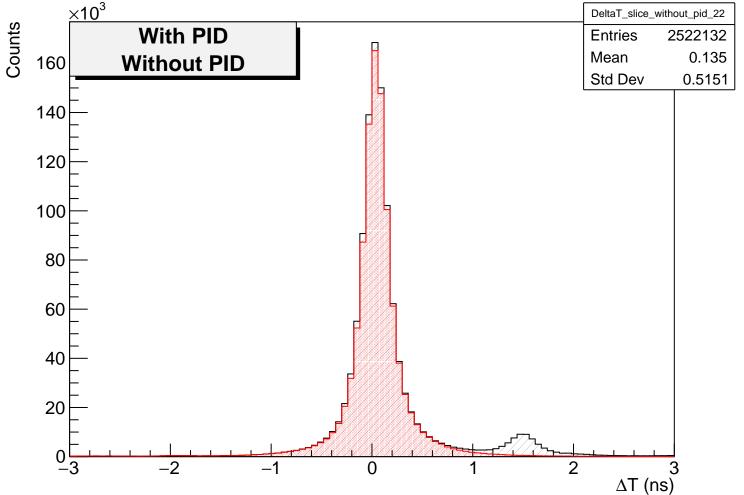
Momentum range [1.20, 1.25] GeV (Without PID)



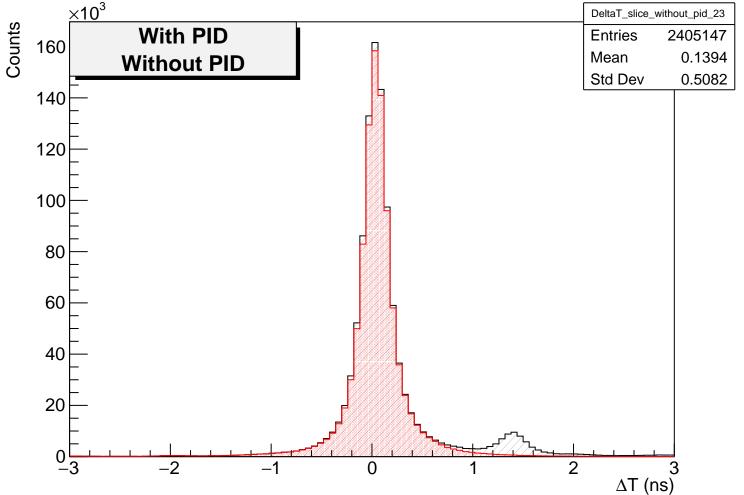
Momentum range [1.25, 1.30] GeV (Without PID) $\times 10^3$ DeltaT_slice_without_pid_21 Counts With PID 180 **Entries** 2643093 0.1323 Mean Without PID Std Dev 0.5226 160 140 120 100 80 60 40 20 0_3

 ΔT (ns)

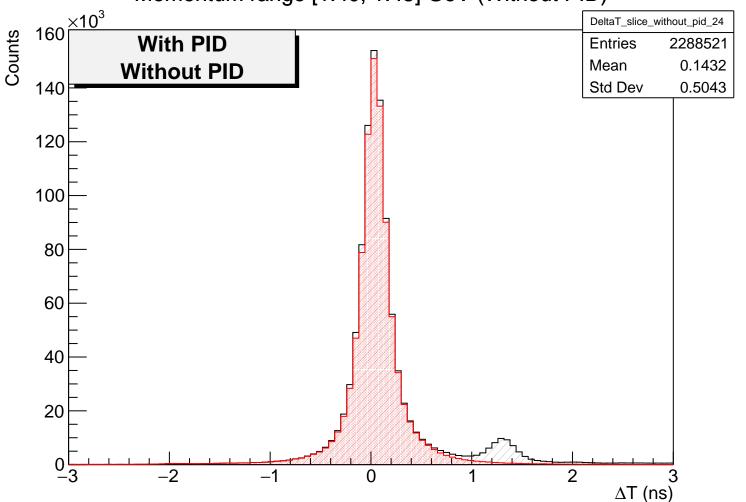
Momentum range [1.30, 1.35] GeV (Without PID)



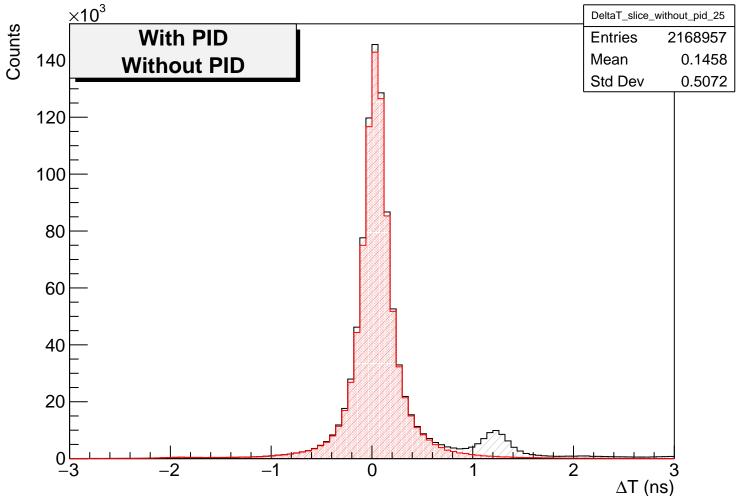
Momentum range [1.35, 1.40] GeV (Without PID)



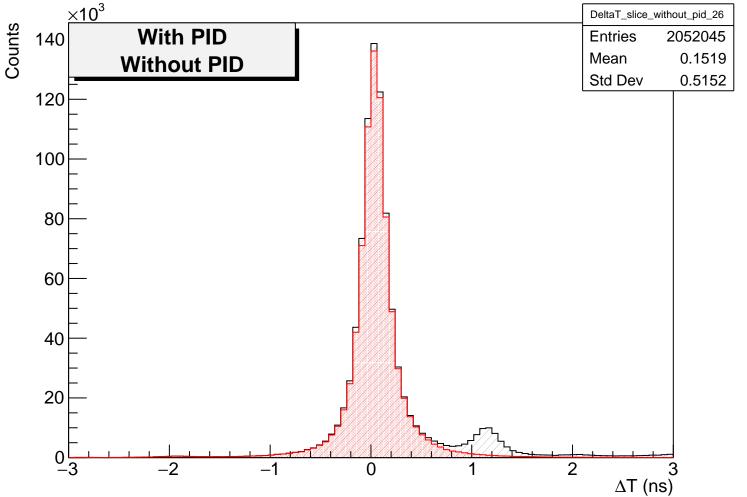
Momentum range [1.40, 1.45] GeV (Without PID)



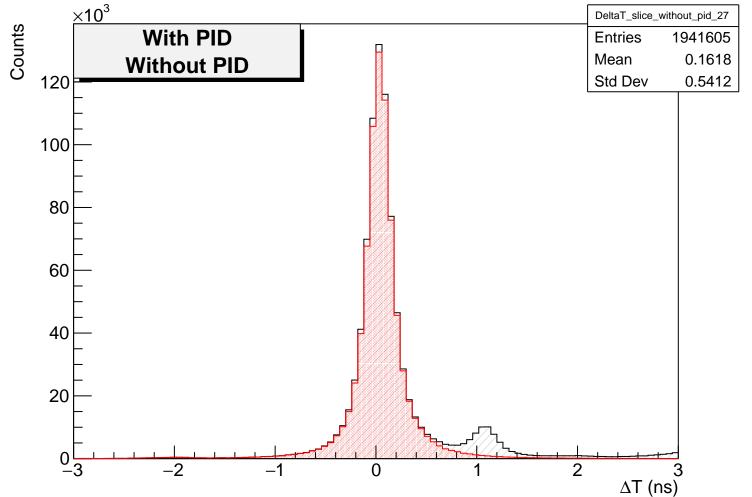
Momentum range [1.45, 1.50] GeV (Without PID)



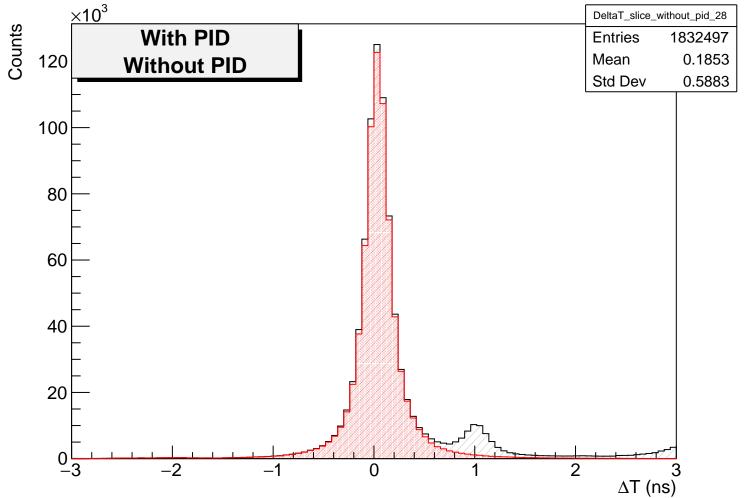
Momentum range [1.50, 1.55] GeV (Without PID)



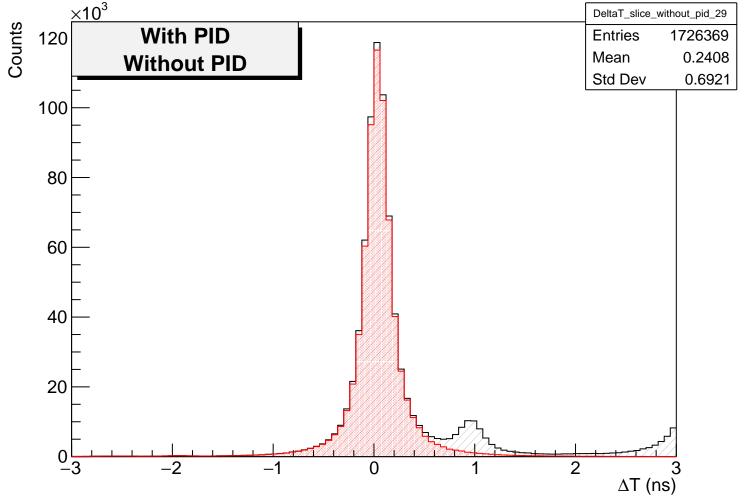
Momentum range [1.55, 1.60] GeV (Without PID)



Momentum range [1.60, 1.65] GeV (Without PID)



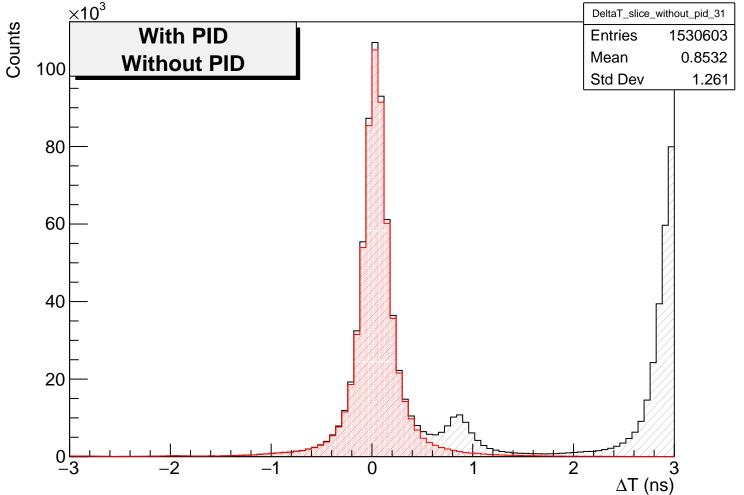
Momentum range [1.65, 1.70] GeV (Without PID)



Momentum range [1.70, 1.75] GeV (Without PID) $\times 10^3$ DeltaT_slice_without_pid_30 Counts With PID **Entries** 1626686 0.4208 Mean **Without PID** Std Dev 0.9401 100 80 60 40 20 0 5

 ΔT (ns)

Momentum range [1.75, 1.80] GeV (Without PID)



Momentum range [1.80, 1.85] GeV (Without PID) $\times 10^3$ DeltaT_slice_without_pid_32 Counts With PID **Entries** 1437904 100 Mean 1.214 **Without PID** Std Dev 1.359 80 60 40 20 0 5

 ΔT (ns)

Momentum range [1.85, 1.90] GeV (Without PID) 100 × 10³ DeltaT_slice_without_pid_33 Counts With PID **Entries** 1349233 Mean 1.324 Without PID Std Dev 1.334 80 60 40 20 0<u>L</u> ΔT (ns)

Momentum range [1.90, 1.95] GeV (Without PID) DeltaT_slice_without_pid_34 With PID **Entries** 1263485 90000 Mean 1.308 **Without PID** Std Dev 1.284 80000 70000 60000 50000 40000 30000 20000 10000

 ΔT (ns)

Momentum range [1.95, 2.00] GeV (Without PID) DeltaT_slice_without_pid_35 90000 With PID **Entries** 1183443 Mean 1.265 Without PID 80000 Std Dev 1.231 70000 60000 50000 40000 30000 20000 10000

 ΔT (ns)

Momentum range [2.00, 2.05] GeV (Without PID) DeltaT_slice_without_pid_36 With PID **Entries** 1110764 Mean 1.209 **Without PID** Std Dev 1.181

 ΔT (ns)

80000

70000

60000

50000

40000

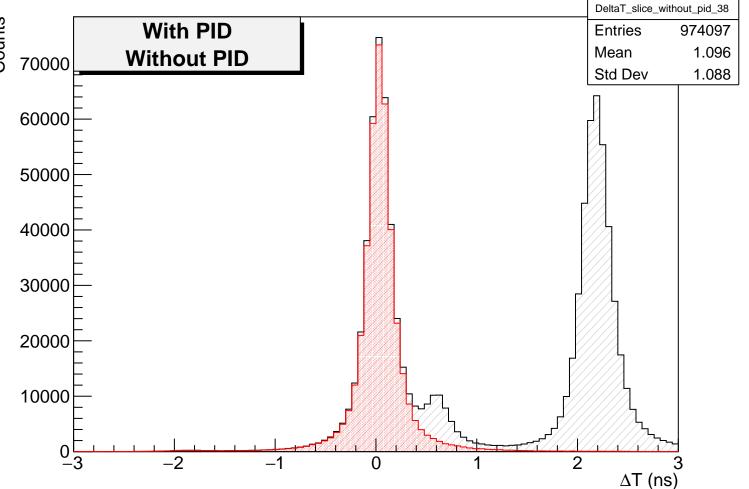
30000

20000

10000

Momentum range [2.05, 2.10] GeV (Without PID) DeltaT_slice_without_pid_37 80000 With PID **Entries** 1041071 Mean 1.153 Without PID Std Dev 1.134 70000 60000 50000 40000 30000 20000 10000

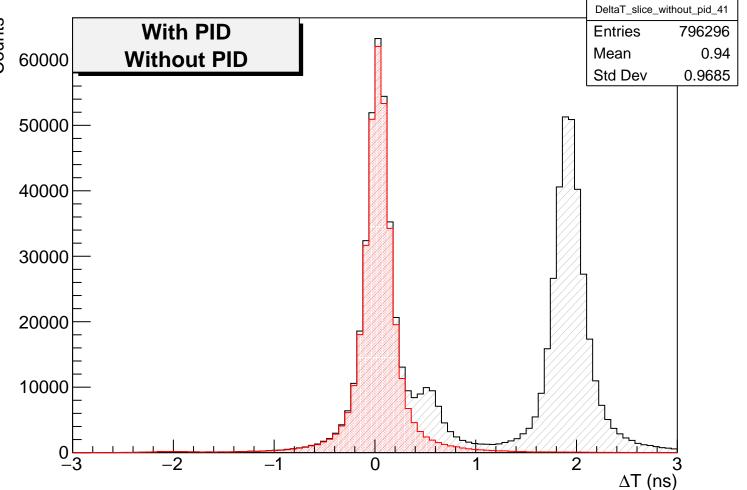
Momentum range [2.10, 2.15] GeV (Without PID)



Momentum range [2.15, 2.20] GeV (Without PID) DeltaT_slice_without_pid_39 With PID **Entries** 908881 70000 Mean 1.04 **Without PID** Std Dev 1.046 60000 50000 40000 30000 20000 10000

Momentum range [2.20, 2.25] GeV (Without PID) DeltaT_slice_without_pid_40 70000 With PID **Entries** 854164 Mean 0.9934 **Without PID** Std Dev 1.006 60000 50000 40000 30000 20000 10000

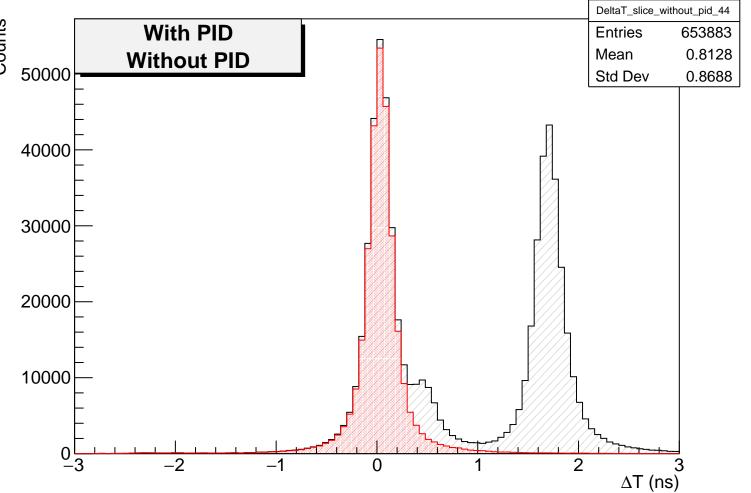
Momentum range [2.25, 2.30] GeV (Without PID)



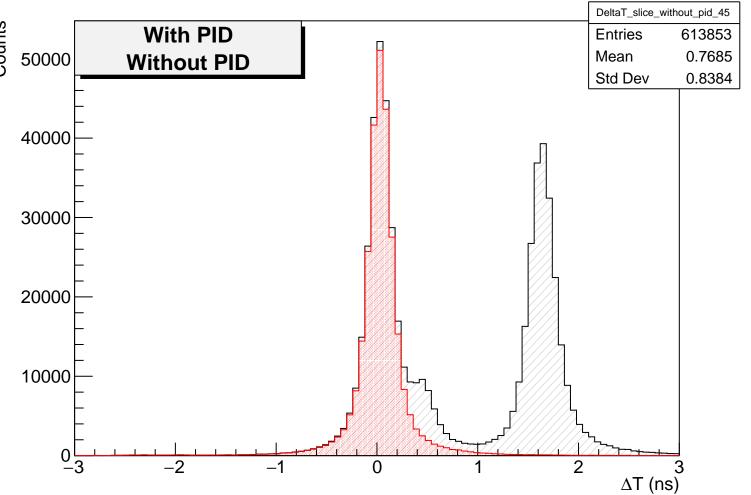
Momentum range [2.30, 2.35] GeV (Without PID) DeltaT_slice_without_pid_42 With PID **Entries** 747442 60000 Mean 0.8971 **Without PID** Std Dev 0.9326 50000 40000 30000 20000 10000 ΔT (ns)

Momentum range [2.35, 2.40] GeV (Without PID) DeltaT_slice_without_pid_43 60000 With PID **Entries** 699282 Mean 0.8543 **Without PID** Std Dev 0.9001 50000 40000 30000 20000 10000 $\Delta T (ns)$

Momentum range [2.40, 2.45] GeV (Without PID)

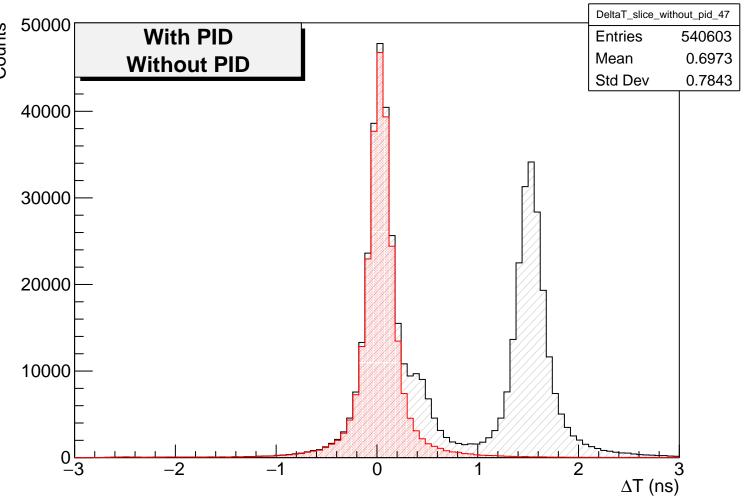


Momentum range [2.45, 2.50] GeV (Without PID)



Momentum range [2.50, 2.55] GeV (Without PID) DeltaT_slice_without_pid_46 With PID **Entries** 574733 50000 Mean 0.732 **Without PID** Std Dev 0.811 40000 30000 20000 10000 0<u>L</u>

Momentum range [2.55, 2.60] GeV (Without PID)



Momentum range [2.60, 2.65] GeV (Without PID) DeltaT_slice_without_pid_48 With PID **Entries** 506545 Mean 0.6657 **Without PID** Std Dev 0.7612

 ΔT (ns)

45000

40000

35000

30000

25000

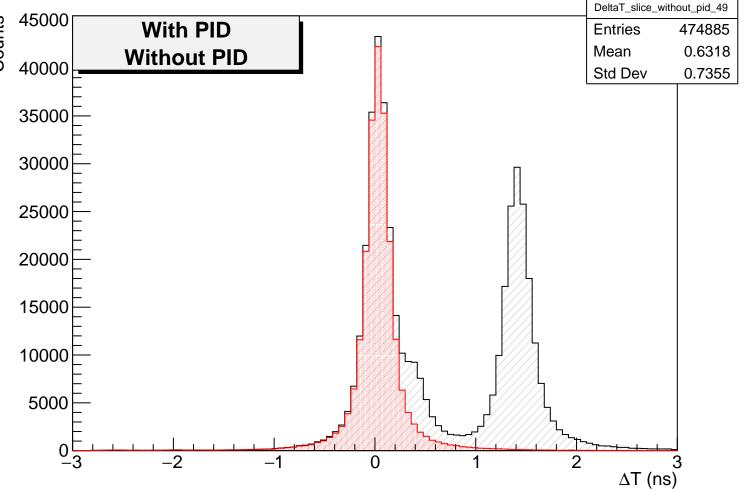
20000

15000

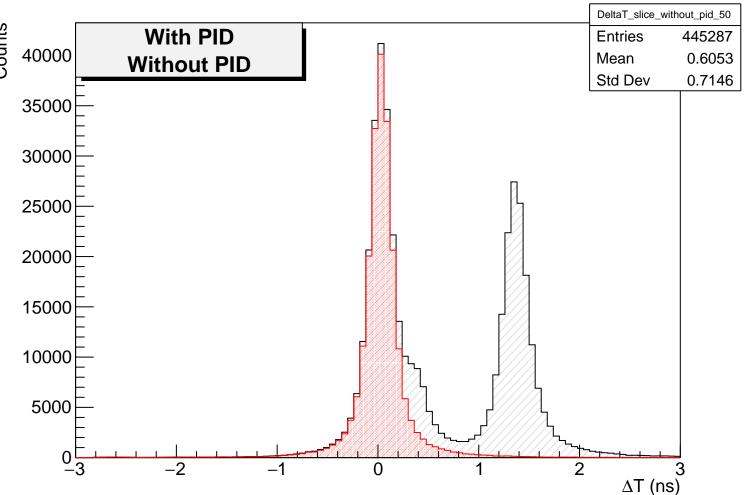
10000

5000

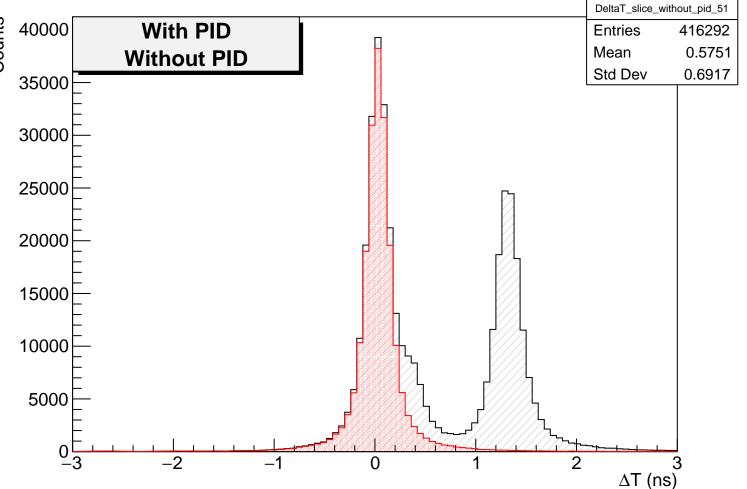
Momentum range [2.65, 2.70] GeV (Without PID)



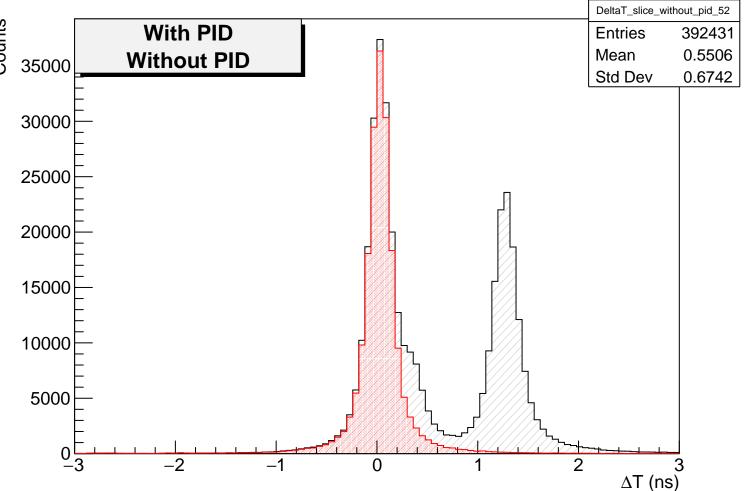
Momentum range [2.70, 2.75] GeV (Without PID)



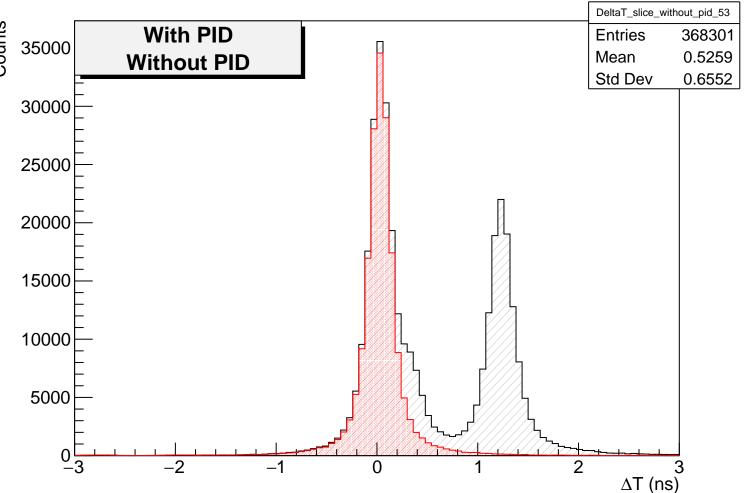
Momentum range [2.75, 2.80] GeV (Without PID)



Momentum range [2.80, 2.85] GeV (Without PID)



Momentum range [2.85, 2.90] GeV (Without PID)



Momentum range [2.90, 2.95] GeV (Without PID) DeltaT_slice_without_pid_54 With PID **Entries** 347079 Mean 0.5052 **Without PID** Std Dev 0.6382

 ΔT (ns)

35000

30000

25000

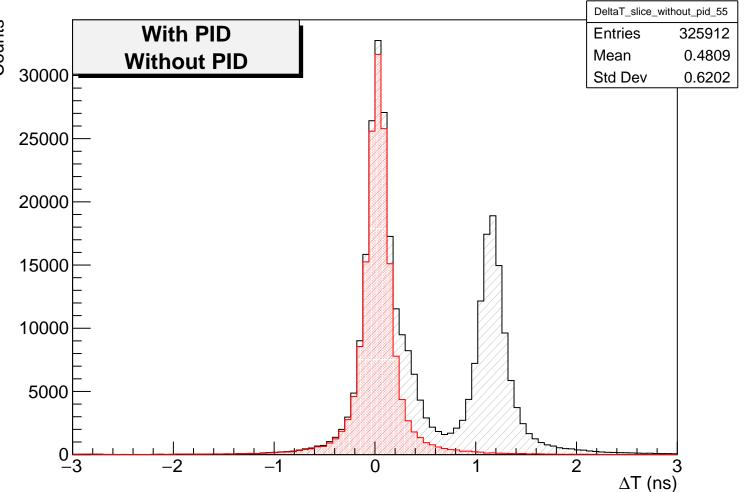
20000

15000

10000

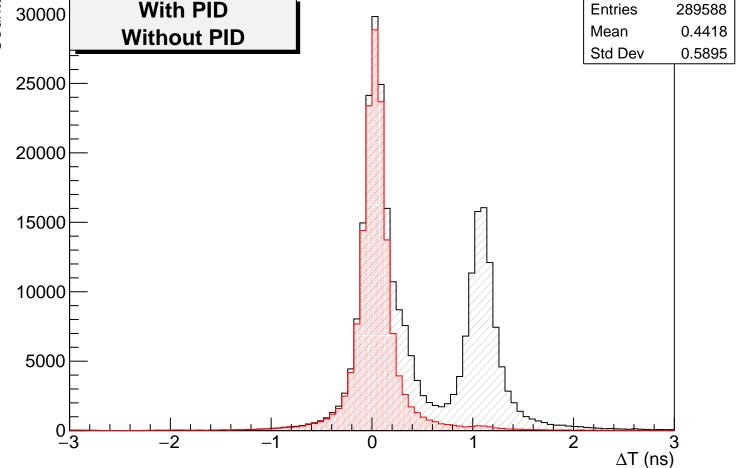
5000

Momentum range [2.95, 3.00] GeV (Without PID)

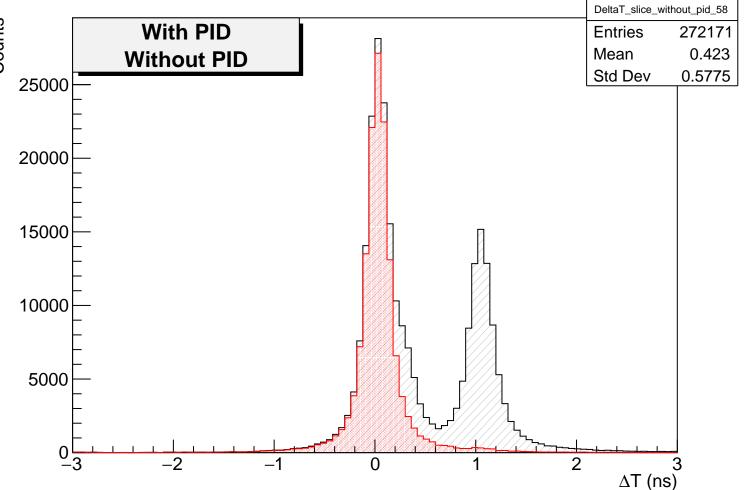


Momentum range [3.00, 3.05] GeV (Without PID) DeltaT_slice_without_pid_56 With PID **Entries** 308591 30000 0.4586 Mean **Without PID** Std Dev 0.604 25000 20000 15000 10000 5000

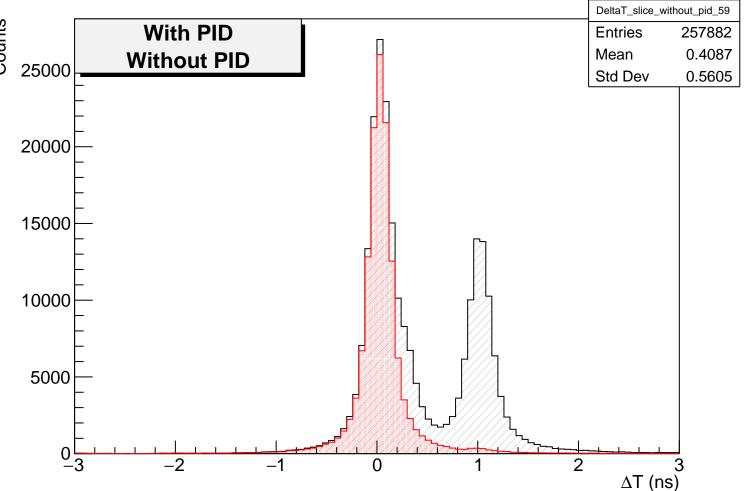
Momentum range [3.05, 3.10] GeV (Without PID) DeltaT_slice_without_pid_57 With PID **Entries** Mean **Without PID** Std Dev



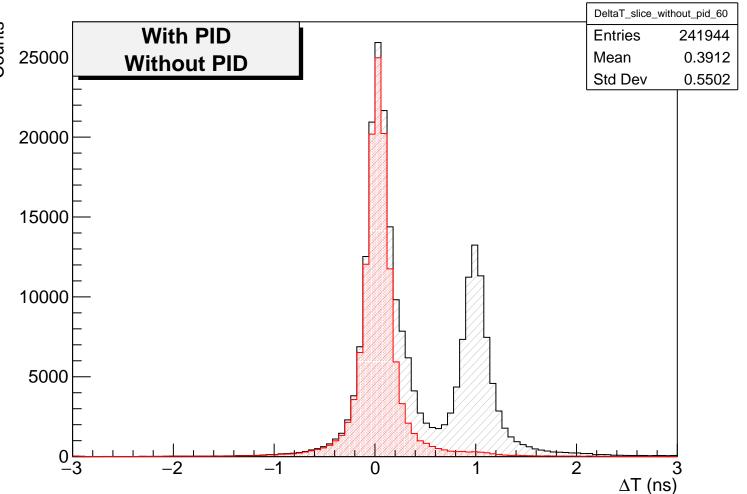
Momentum range [3.10, 3.15] GeV (Without PID)



Momentum range [3.15, 3.20] GeV (Without PID)



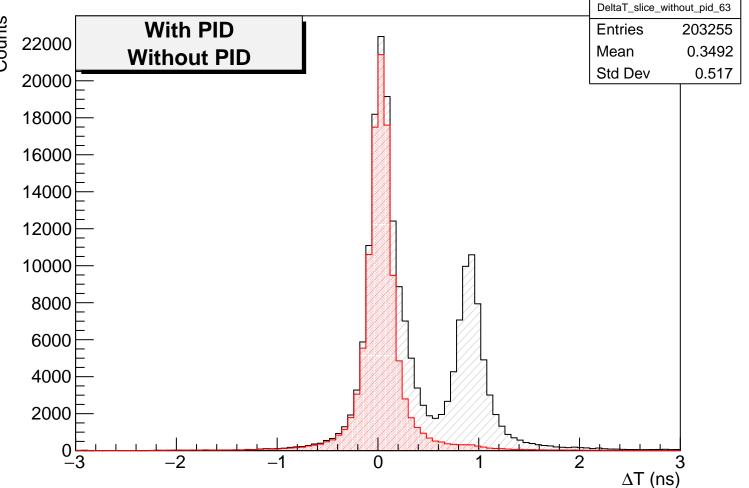
Momentum range [3.20, 3.25] GeV (Without PID)



Momentum range [3.25, 3.30] GeV (Without PID) DeltaT_slice_without_pid_61 25000 With PID **Entries** 227598 Mean 0.3771 Without PID Std Dev 0.5354 20000 15000 10000 5000 0 5

Momentum range [3.30, 3.35] GeV (Without PID) DeltaT_slice_without_pid_62 24000 With PID **Entries** 215176 Mean 0.3638 Without PID 22000 Std Dev 0.5275 20000 18000 16000 14000 12000 10000 8000 6000 4000 2000 0 🗆

Momentum range [3.35, 3.40] GeV (Without PID)

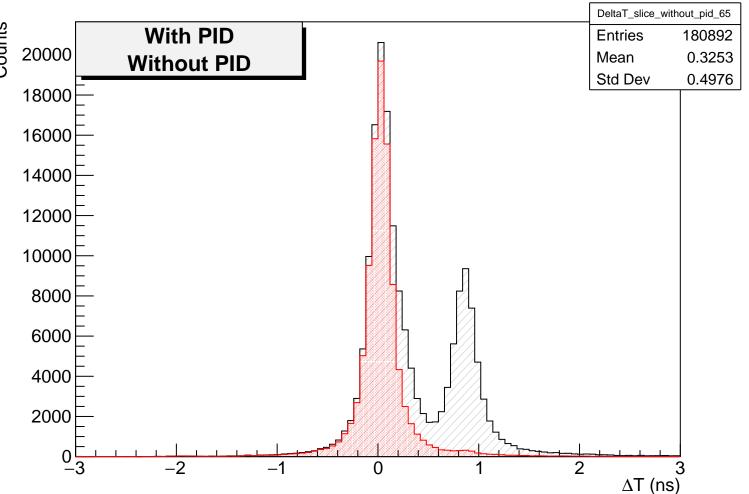


Momentum range [3.40, 3.45] GeV (Without PID) DeltaT_slice_without_pid_64 With PID 22000 **Entries** 193544 Mean 0.3378 Without PID 20000 Std Dev 0.5061 18000 16000 14000 12000 10000 8000 6000 4000 2000

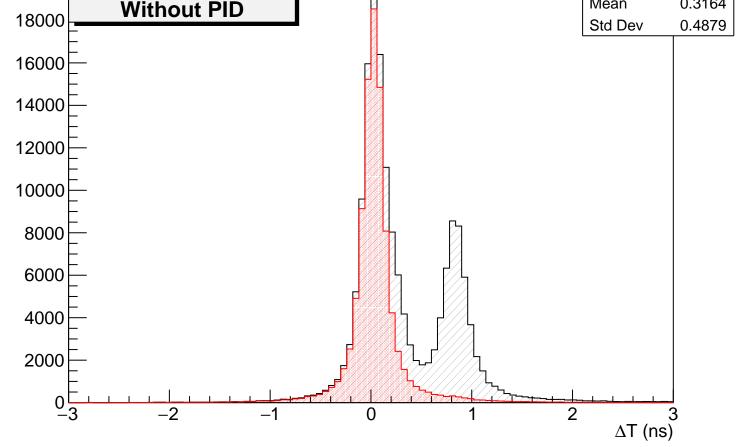
 ΔT (ns)

0 🗆

Momentum range [3.45, 3.50] GeV (Without PID)

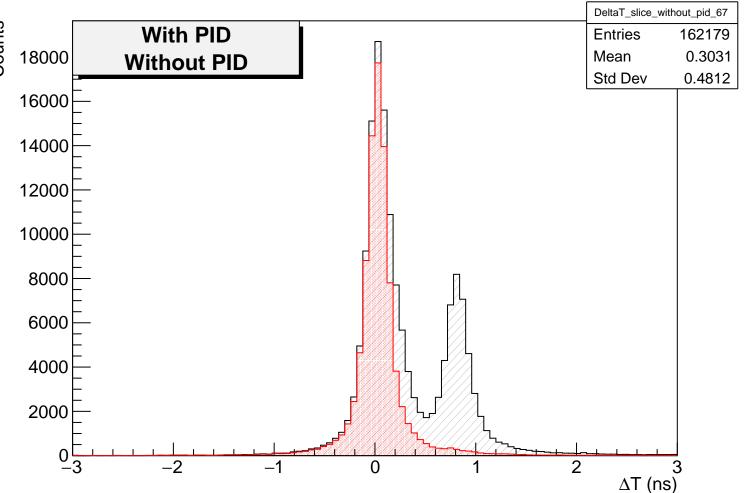


Momentum range [3.50, 3.55] GeV (Without PID) DeltaT_slice_without_pid_66 With PID **Entries** 171737 Mean 0.3164 Without PID Std Dev 0.4879



20000

Momentum range [3.55, 3.60] GeV (Without PID)



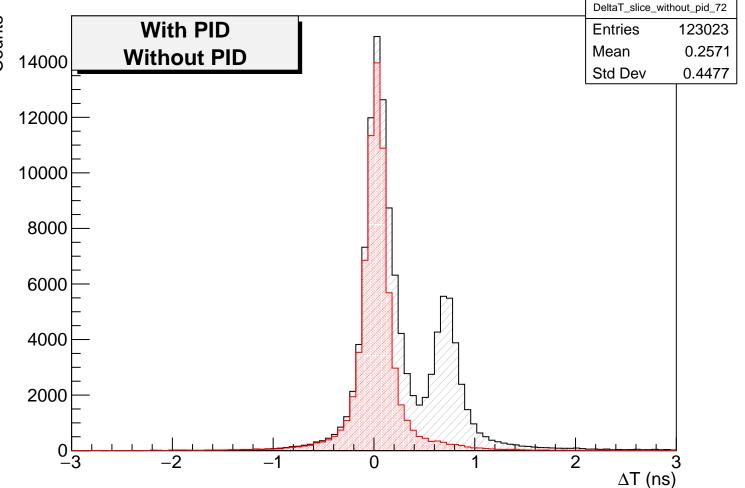
Momentum range [3.60, 3.65] GeV (Without PID) DeltaT_slice_without_pid_68 With PID 18000 **Entries** 152465 Mean 0.2943 **Without PID** Std Dev 0.4719 16000 14000 12000 10000 8000 6000 4000 2000

Momentum range [3.65, 3.70] GeV (Without PID) DeltaT_slice_without_pid_69 With PID **Entries** 144451 Mean 0.2868 **Without PID** 16000 Std Dev 0.4674 14000 12000 10000 8000 6000 4000 2000

Momentum range [3.70, 3.75] GeV (Without PID) DeltaT_slice_without_pid_70 With PID **Entries** 137059 16000 Mean 0.2766 **Without PID** Std Dev 0.4607 14000 12000 10000 8000 6000 4000 2000

Momentum range [3.75, 3.80] GeV (Without PID) DeltaT_slice_without_pid_71 16000 With PID **Entries** 128998 Mean 0.2658 Without PID Std Dev 0.456 14000 12000 10000 8000 6000 4000 2000

Momentum range [3.80, 3.85] GeV (Without PID)



Momentum range [3.85, 3.90] GeV (Without PID) DeltaT_slice_without_pid_73 With PID **Entries** 116779 Mean 0.2514 **Without PID** Std Dev 0.4436

 ΔT (ns)

14000

12000

10000

8000

6000

4000

2000

0 5

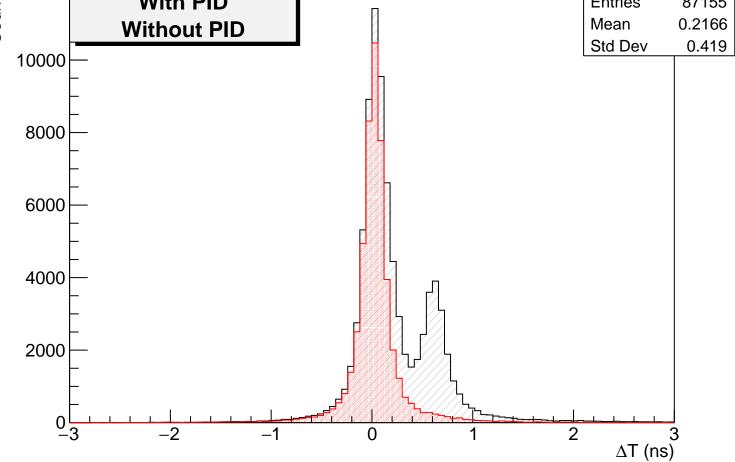
Momentum range [3.90, 3.95] GeV (Without PID) DeltaT_slice_without_pid_74 14000 With PID **Entries** 109077 Mean 0.2431 **Without PID** Std Dev 0.4359 12000 10000 8000 6000 4000 2000

Momentum range [3.95, 4.00] GeV (Without PID) DeltaT_slice_without_pid_75 With PID **Entries** 103548 Mean 0.237 Without PID 12000 Std Dev 0.431 10000 8000 6000 4000 2000 0<u>L</u>

Momentum range [4.00, 4.05] GeV (Without PID) DeltaT_slice_without_pid_76 With PID **Entries** 97780 12000 Mean 0.2291 **Without PID** Std Dev 0.4253 10000 8000 6000 4000 2000 0<u>L</u>

Momentum range [4.05, 4.10] GeV (Without PID) DeltaT_slice_without_pid_77 With PID 12000 **Entries** 92647 Mean 0.2253 **Without PID** Std Dev 0.4218 10000 8000 6000 4000 2000 0<u>L</u>

Momentum range [4.10, 4.15] GeV (Without PID) DeltaT_slice_without_pid_78 With PID **Entries** 87155 0.2166 Mean **Without PID** Std Dev 0.419

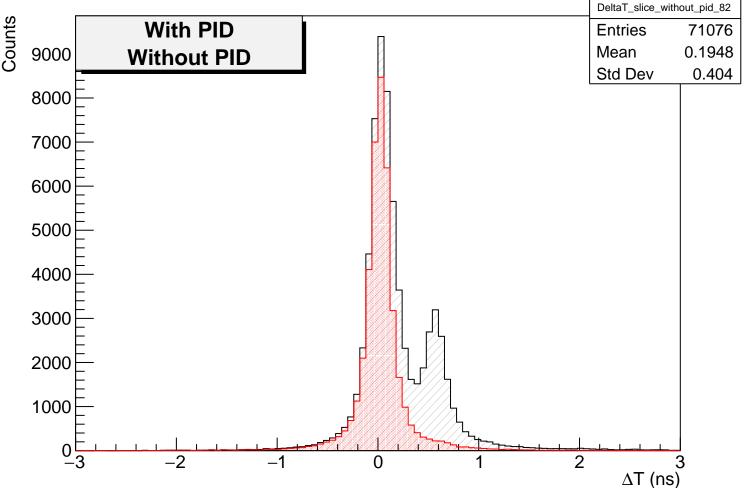


Momentum range [4.15, 4.20] GeV (Without PID) DeltaT_slice_without_pid_79 With PID **Entries** 83194 Mean 0.2129 Without PID 10000 Std Dev 0.415 8000 6000 4000 2000 0<u>L</u>

Momentum range [4.20, 4.25] GeV (Without PID) DeltaT_slice_without_pid_80 With PID **Entries** 78538 10000 0.2068 Mean **Without PID** Std Dev 0.4112 8000 6000 4000 2000 0<u>L</u>

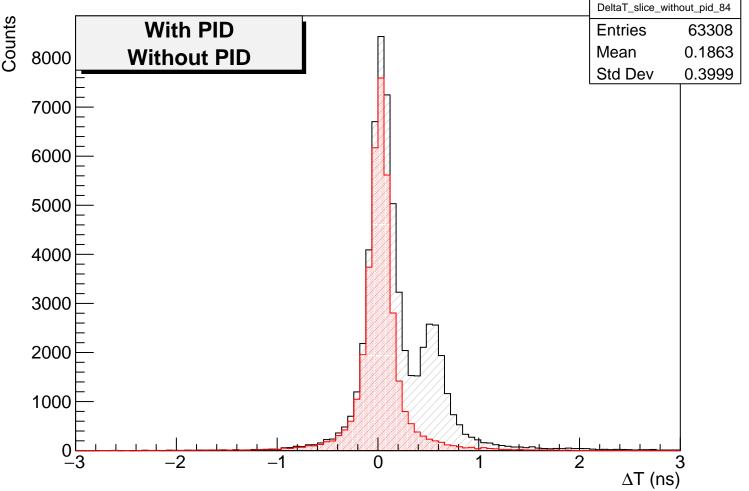
Momentum range [4.25, 4.30] GeV (Without PID) DeltaT_slice_without_pid_81 10000 With PID **Entries** 75238 0.2018 Mean Without PID Std Dev 0.4098 8000 6000 4000 2000 0<u>L</u> ΔT (ns)

Momentum range [4.30, 4.35] GeV (Without PID)

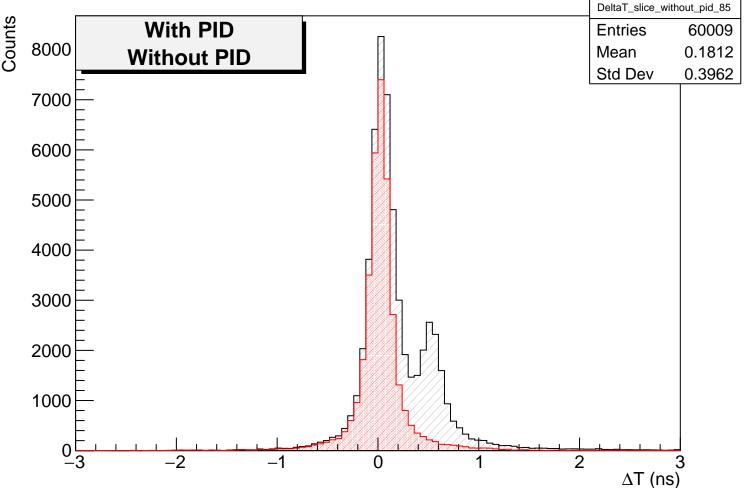


Momentum range [4.35, 4.40] GeV (Without PID) DeltaT_slice_without_pid_83 9000 Counts With PID **Entries** 66781 0.192 Mean Without PID 8000 Std Dev 0.4011 7000 6000 5000 4000 3000 2000 1000 0 🗆 ΔT (ns)

Momentum range [4.40, 4.45] GeV (Without PID)



Momentum range [4.45, 4.50] GeV (Without PID)



Momentum range [4.50, 4.55] GeV (Without PID) DeltaT_slice_without_pid_86 With PID **Entries** 56358 0.1815 Mean Without PID Std Dev 0.3965

 ΔT (ns)

8000

7000

6000

5000

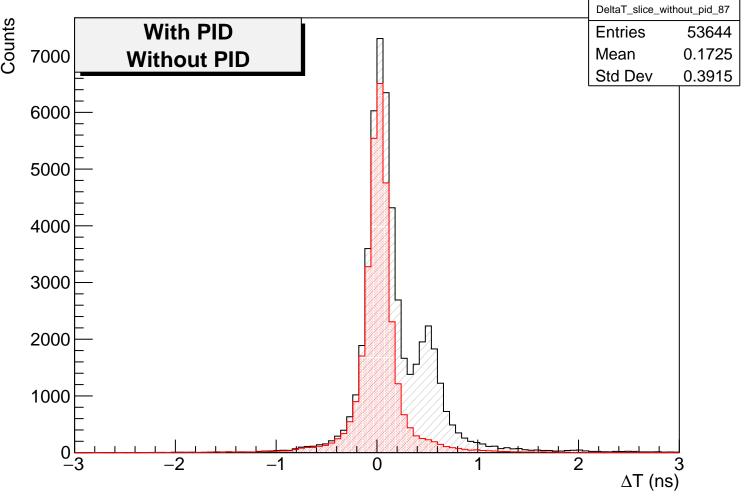
4000

3000

2000

1000

Momentum range [4.55, 4.60] GeV (Without PID)



Momentum range [4.60, 4.65] GeV (Without PID) DeltaT_slice_without_pid_88 With PID **Entries** 50919 0.1699 Mean Without PID Std Dev 0.395

 ΔT (ns)

Counts

7000

6000

5000

4000

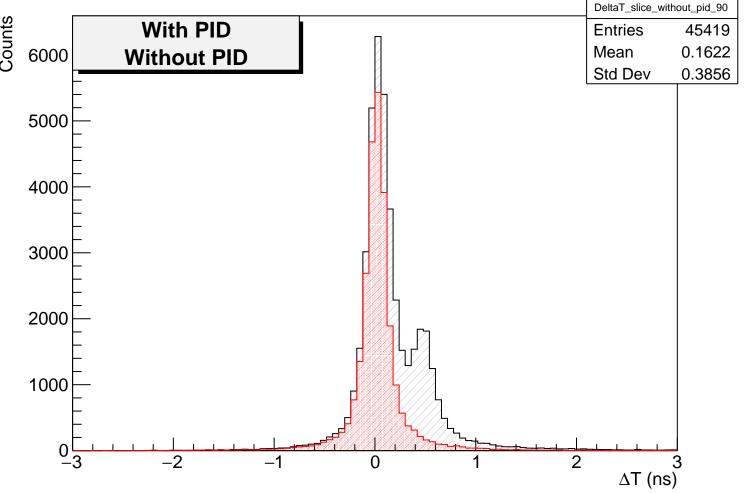
3000

2000

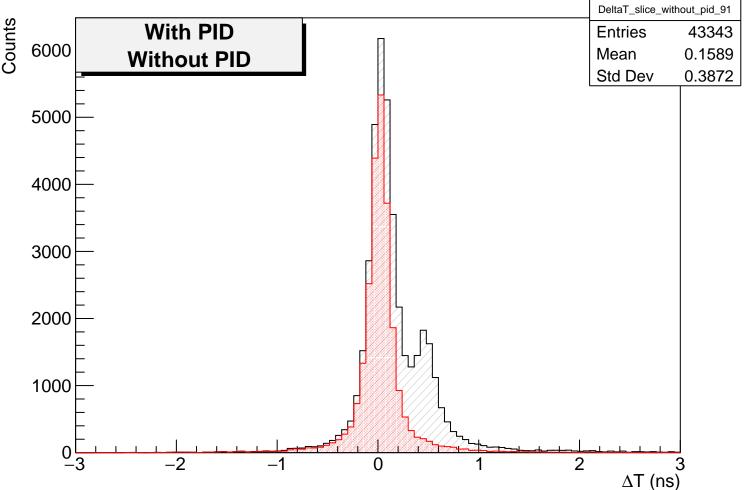
1000

Momentum range [4.65, 4.70] GeV (Without PID) DeltaT_slice_without_pid_89 7000 With PID **Entries** 48388 0.1655 Mean Without PID Std Dev 0.3951 6000 5000 4000 3000 2000 1000

Momentum range [4.70, 4.75] GeV (Without PID)



Momentum range [4.75, 4.80] GeV (Without PID)



Momentum range [4.80, 4.85] GeV (Without PID) DeltaT_slice_without_pid_92 With PID **Entries** 40972 0.154 Mean Without PID Std Dev 0.3807

 ΔT (ns)

6000

5000

4000

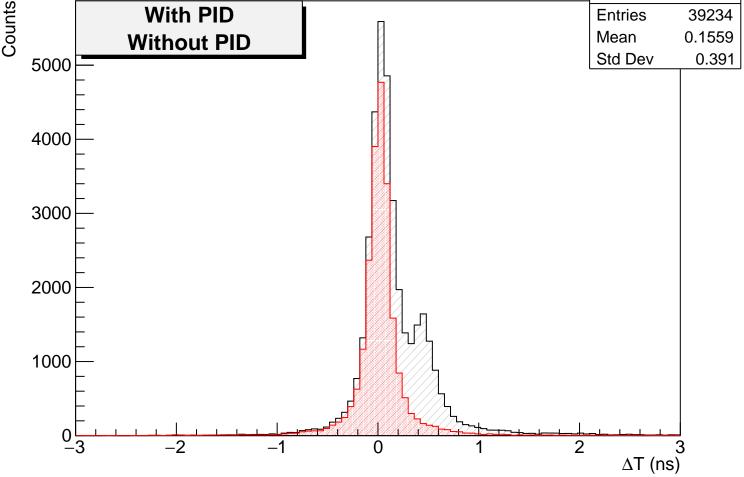
3000

2000

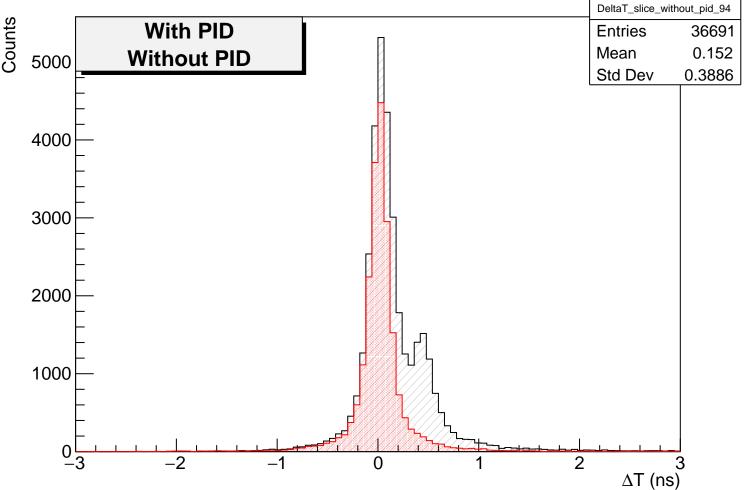
1000

0<u>L</u>

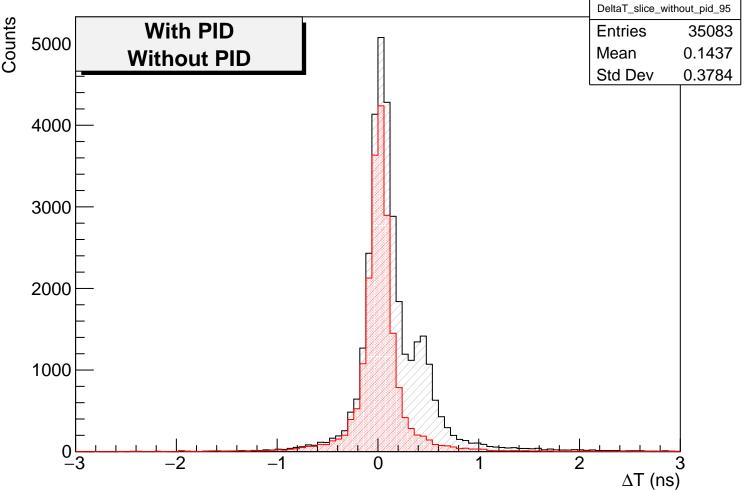
Momentum range [4.85, 4.90] GeV (Without PID) DeltaT_slice_without_pid_93 With PID **Entries** 39234 0.1559 Mean **Without PID** Std Dev 0.391



Momentum range [4.90, 4.95] GeV (Without PID)

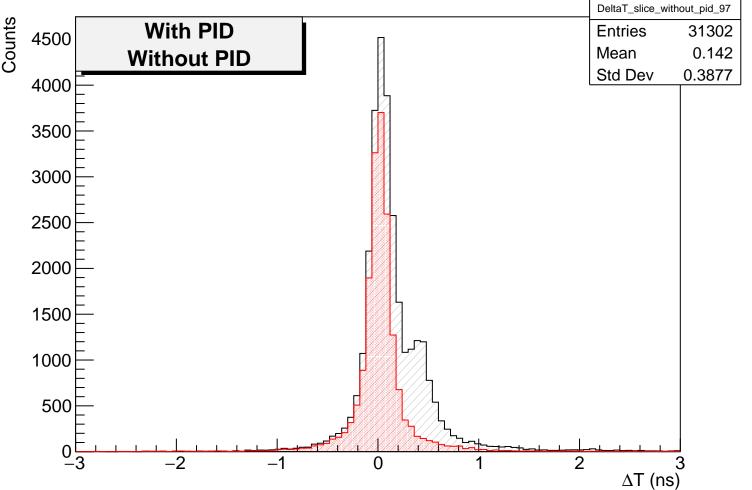


Momentum range [4.95, 5.00] GeV (Without PID)

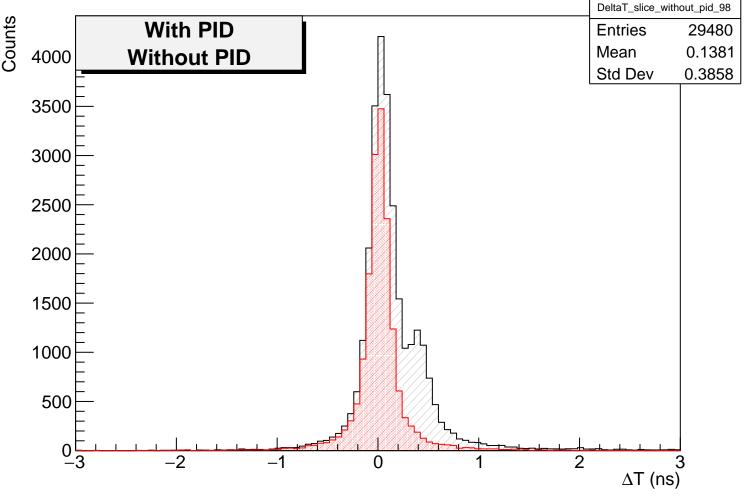


Momentum range [5.00, 5.05] GeV (Without PID) DeltaT_slice_without_pid_96 5000 With PID **Entries** 33694 0.1447 Mean Without PID Std Dev 0.3847 4000 3000 2000 1000 0 5

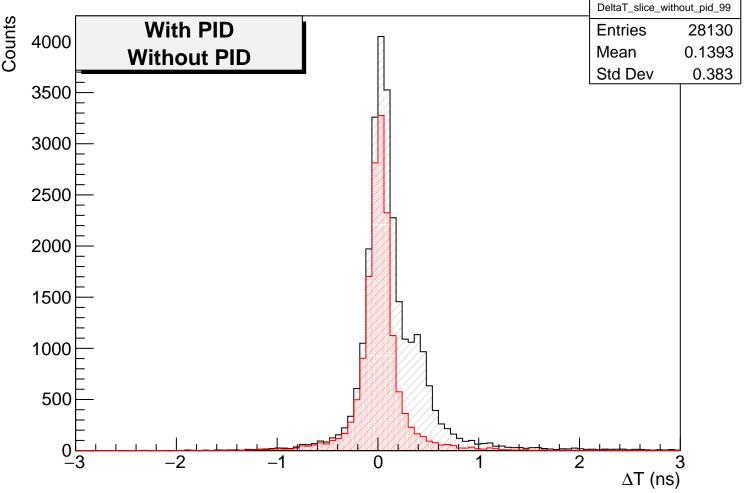
Momentum range [5.05, 5.10] GeV (Without PID)



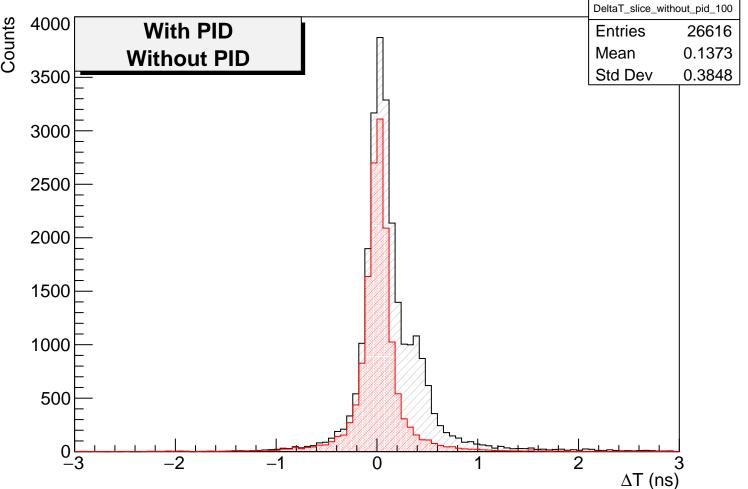
Momentum range [5.10, 5.15] GeV (Without PID)



Momentum range [5.15, 5.20] GeV (Without PID)



Momentum range [5.20, 5.25] GeV (Without PID)



Momentum range [5.25, 5.30] GeV (Without PID) DeltaT_slice_without_pid_101 With PID **Entries** 25364 0.1326 Mean Without PID Std Dev 0.3812

 ΔT (ns)

4000

3500

3000

2500

2000

1500

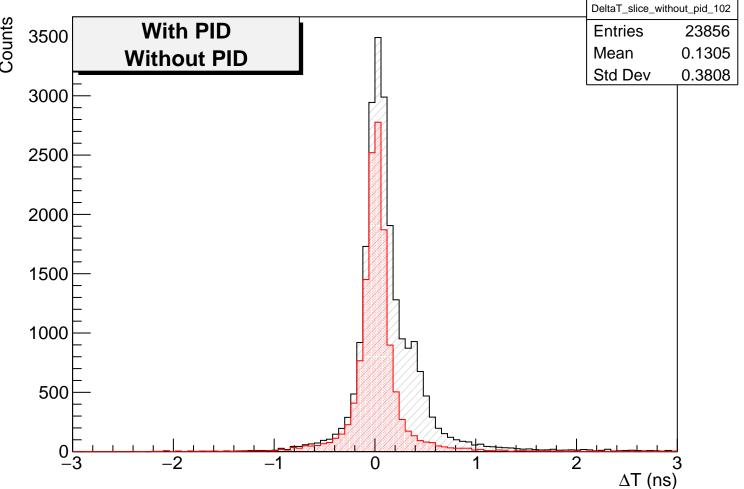
1000

500

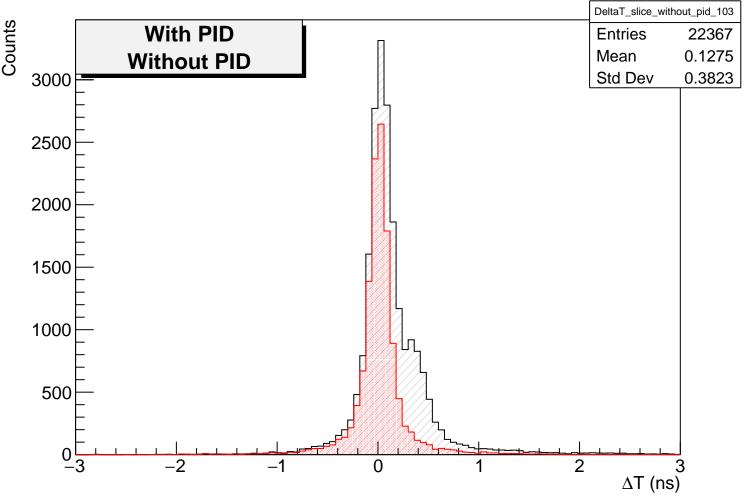
0 5

Counts

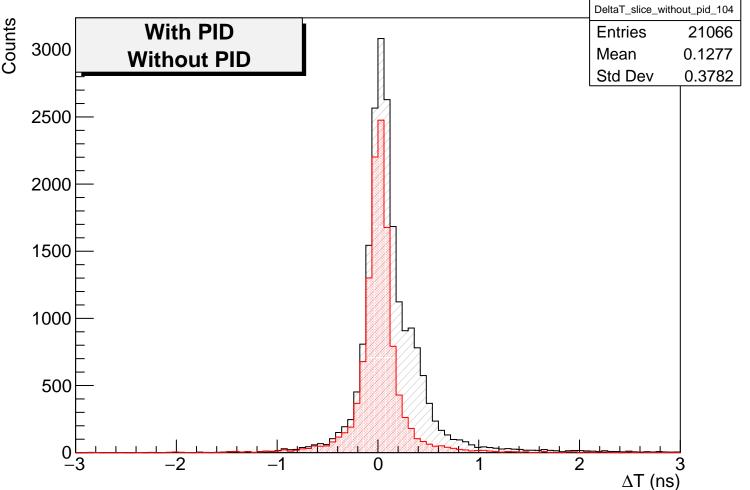
Momentum range [5.30, 5.35] GeV (Without PID)



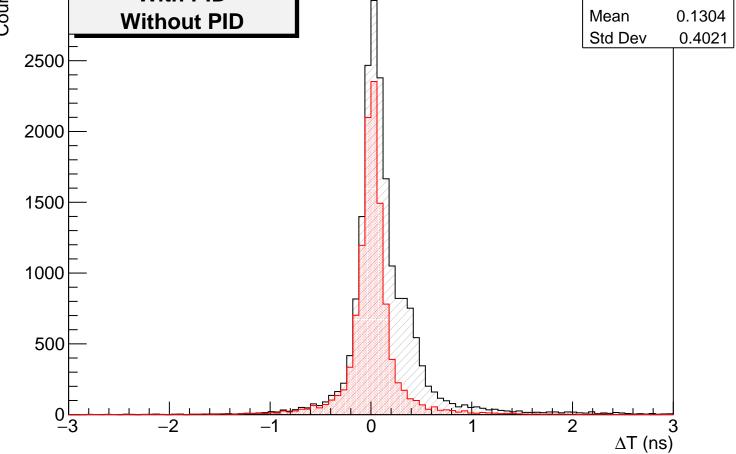
Momentum range [5.35, 5.40] GeV (Without PID)



Momentum range [5.40, 5.45] GeV (Without PID)

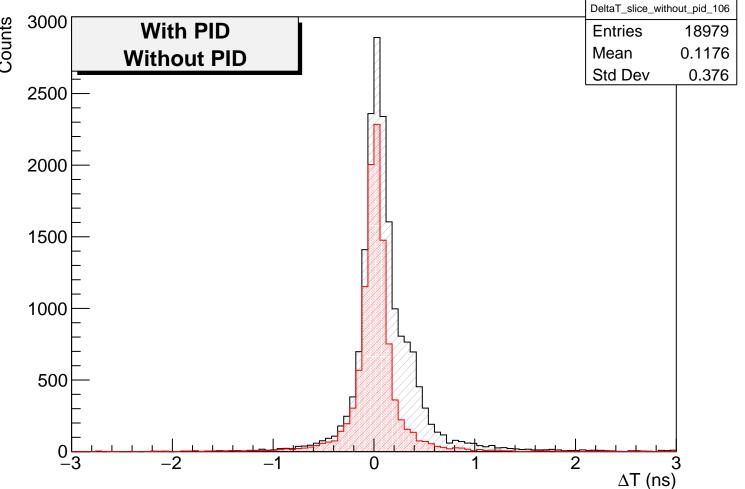


Momentum range [5.45, 5.50] GeV (Without PID) DeltaT_slice_without_pid_105 With PID **Entries** 19896 0.1304 Mean Without PID Std Dev 0.4021

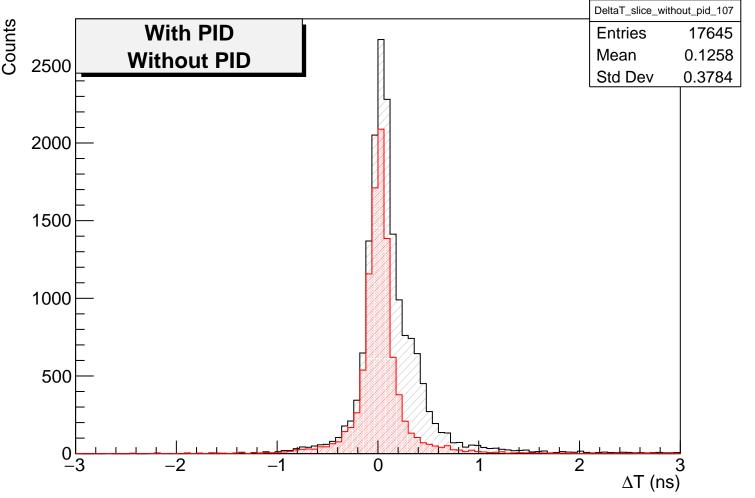


3000

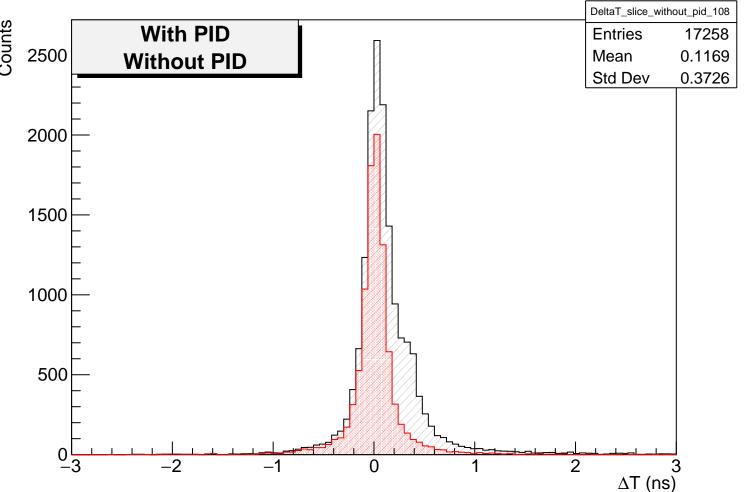
Momentum range [5.50, 5.55] GeV (Without PID)



Momentum range [5.55, 5.60] GeV (Without PID)



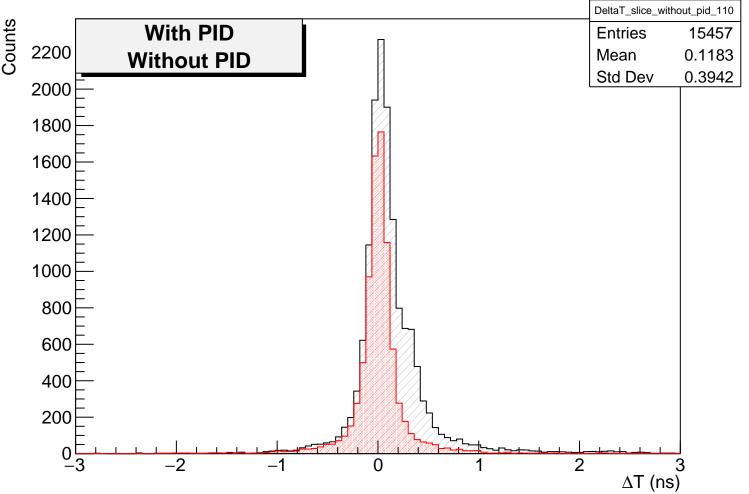
Momentum range [5.60, 5.65] GeV (Without PID)



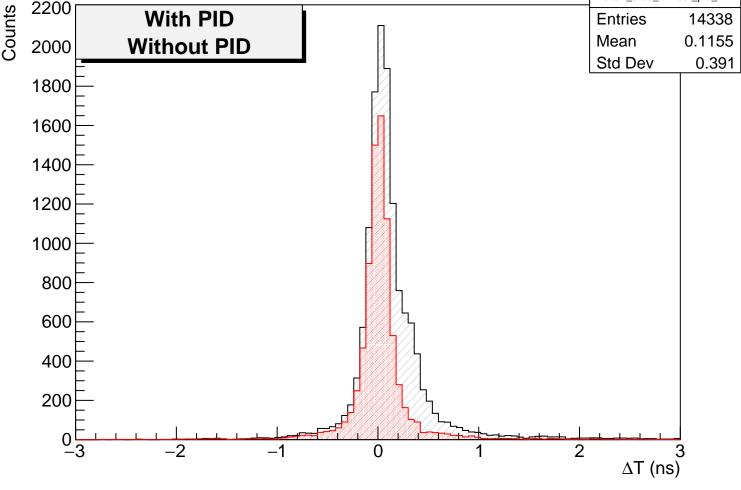
Momentum range [5.65, 5.70] GeV (Without PID) DeltaT_slice_without_pid_109 2500 With PID **Entries** 15953 0.1154 Mean Without PID Std Dev 0.384 2000 1500 1000 500 0<u>L</u>

 ΔT (ns)

Momentum range [5.70, 5.75] GeV (Without PID)



Momentum range [5.75, 5.80] GeV (Without PID) DeltaT_slice_without_pid_111 With PID **Entries** 14338 0.1155 Mean Without PID Std Dev 0.391



2200

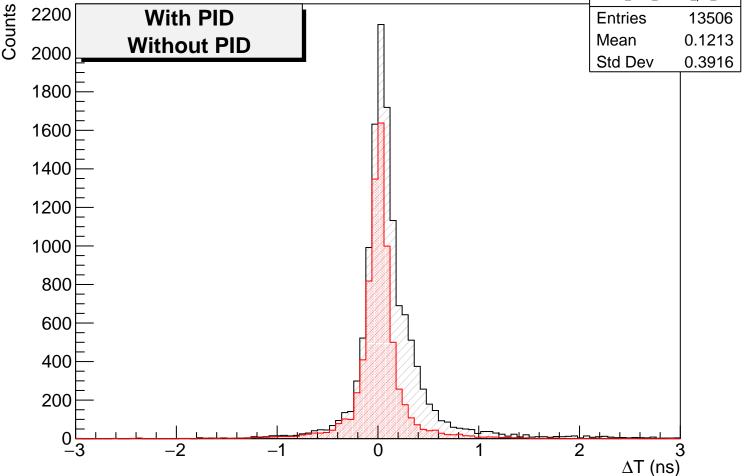
2000

Momentum range [5.80, 5.85] GeV (Without PID)

DeltaT_slice_without_pid_112

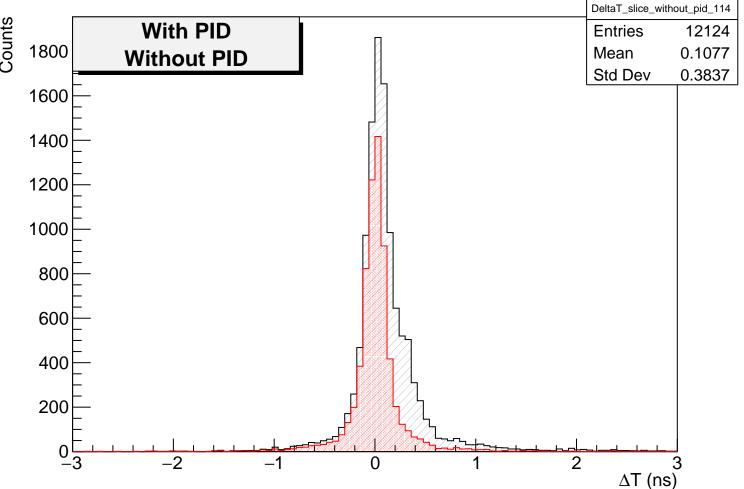
With PID

Entries 13506

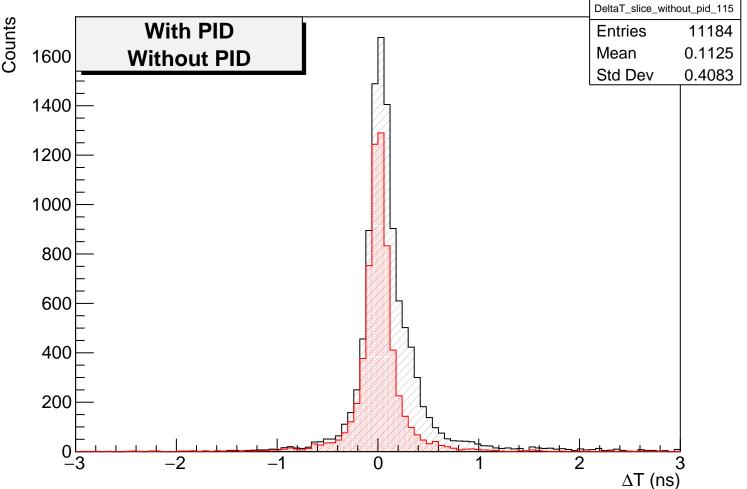


Momentum range [5.85, 5.90] GeV (Without PID) DeltaT_slice_without_pid_113 Counts 2000 With PID **Entries** 12607 0.1117 Mean Without PID 1800 Std Dev 0.3961 1600 1400 1200 1000 800 600 400 200 0<u>L</u> ΔT (ns)

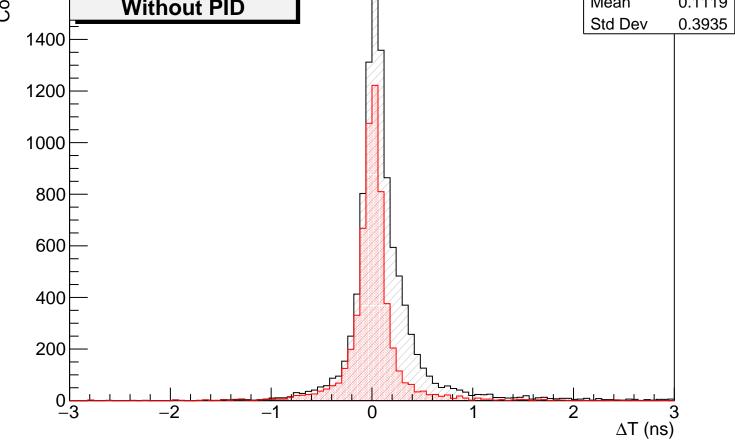
Momentum range [5.90, 5.95] GeV (Without PID)



Momentum range [5.95, 6.00] GeV (Without PID)

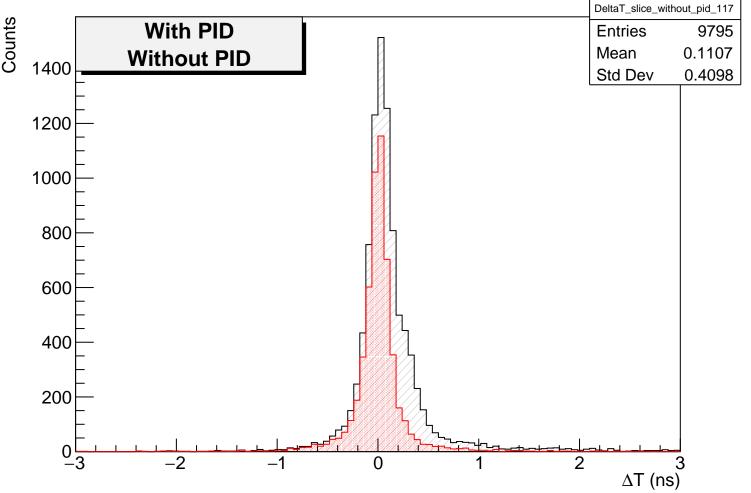


Momentum range [6.00, 6.05] GeV (Without PID) DeltaT_slice_without_pid_116 With PID **Entries** 10549 0.1119 Mean Without PID Std Dev 0.3935

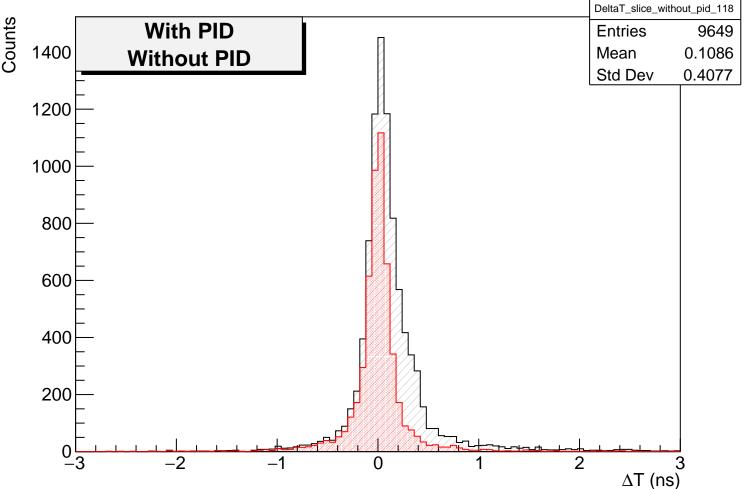


1600

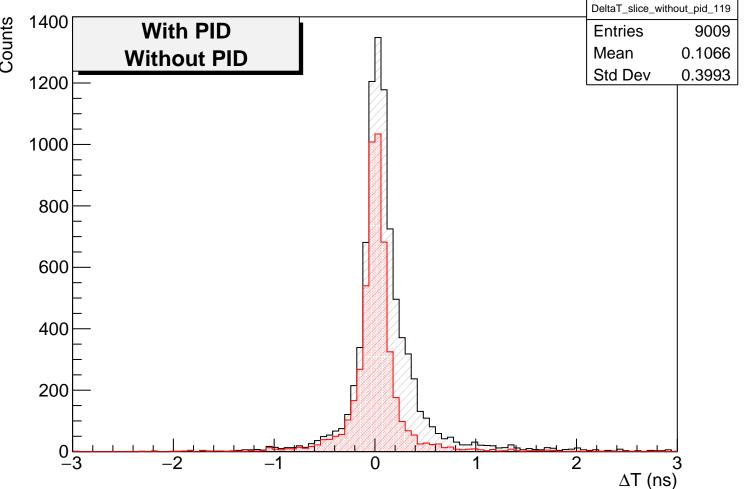
Momentum range [6.05, 6.10] GeV (Without PID)



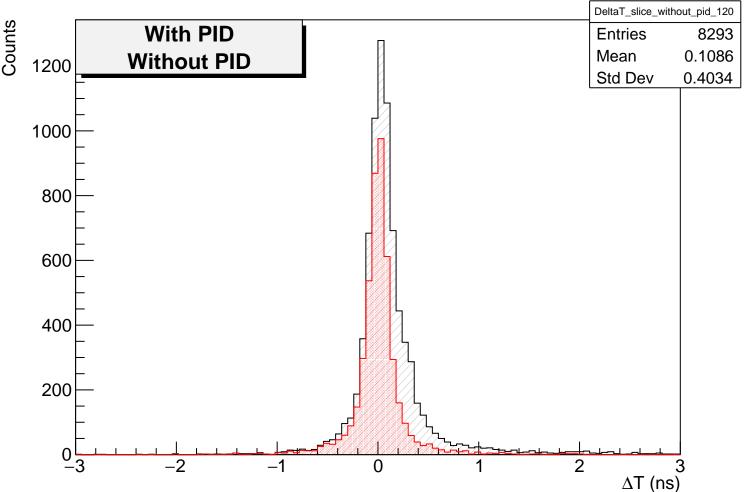
Momentum range [6.10, 6.15] GeV (Without PID)



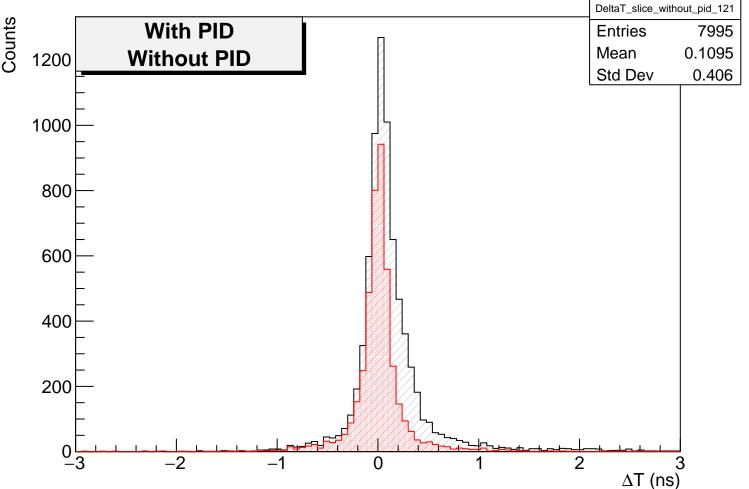
Momentum range [6.15, 6.20] GeV (Without PID)



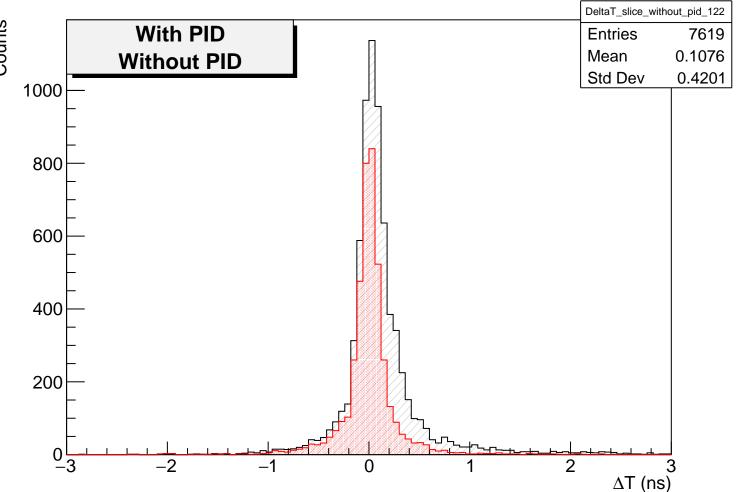
Momentum range [6.20, 6.25] GeV (Without PID)



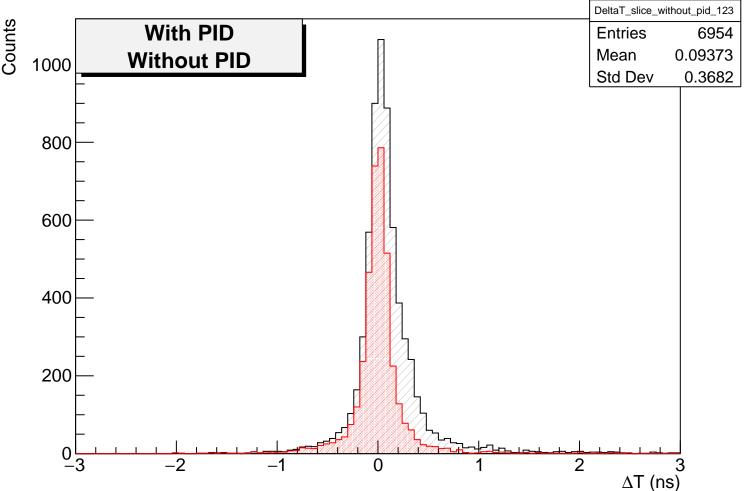
Momentum range [6.25, 6.30] GeV (Without PID)



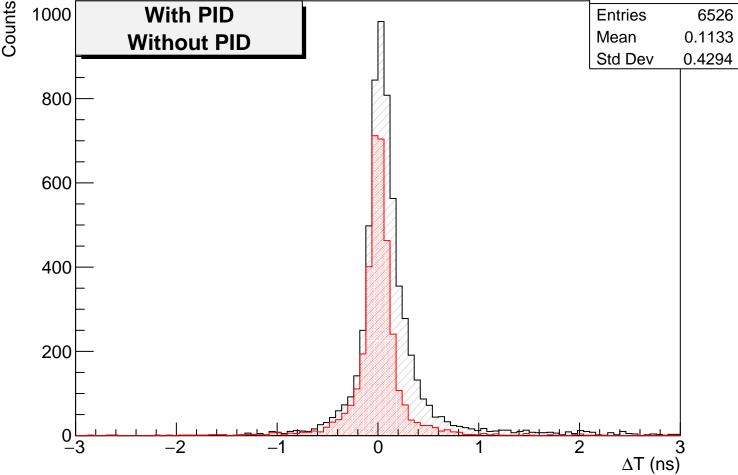
Momentum range [6.30, 6.35] GeV (Without PID)



Momentum range [6.35, 6.40] GeV (Without PID)

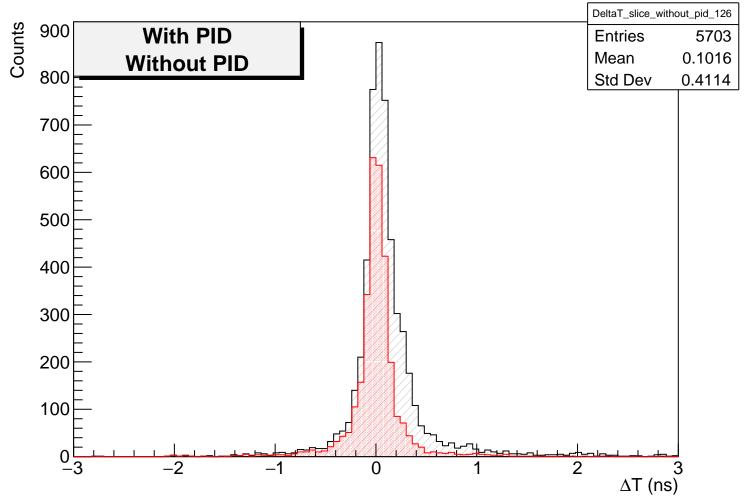


Momentum range [6.40, 6.45] GeV (Without PID) DeltaT_slice_without_pid_124 With PID **Entries** 6526 0.1133 Mean Without PID Std Dev 0.4294

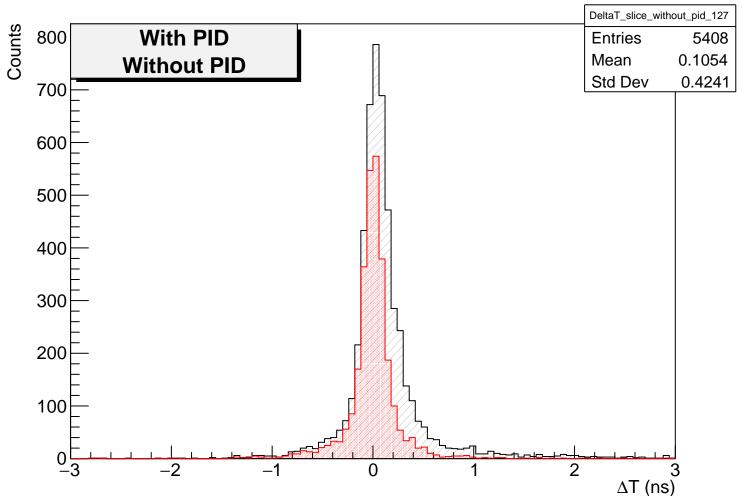


Momentum range [6.45, 6.50] GeV (Without PID) DeltaT_slice_without_pid_125 1000 With PID **Entries** 6238 0.1107 Mean Without PID Std Dev 0.4363 800 600 400 200 0<u>L</u> ΔT (ns)

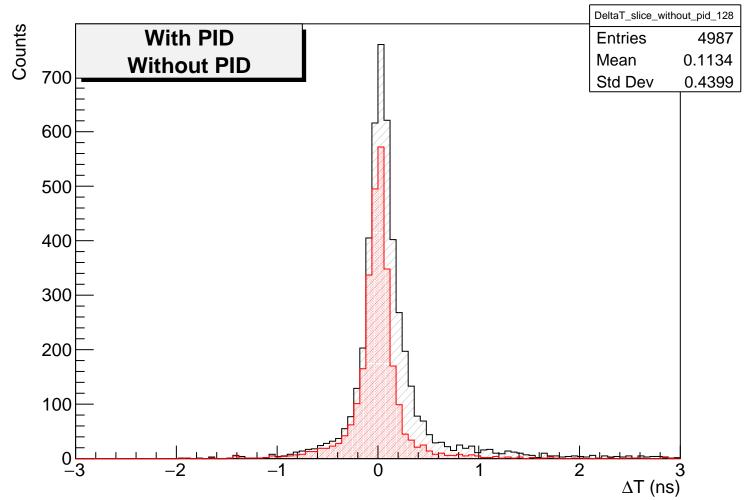
Momentum range [6.50, 6.55] GeV (Without PID)



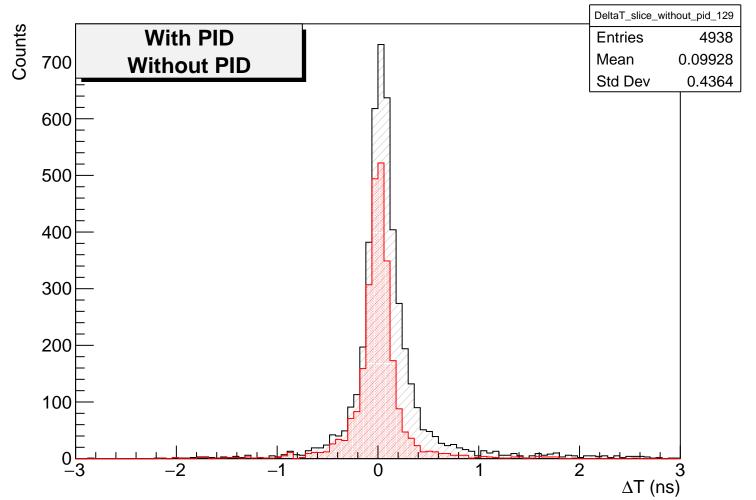
Momentum range [6.55, 6.60] GeV (Without PID)



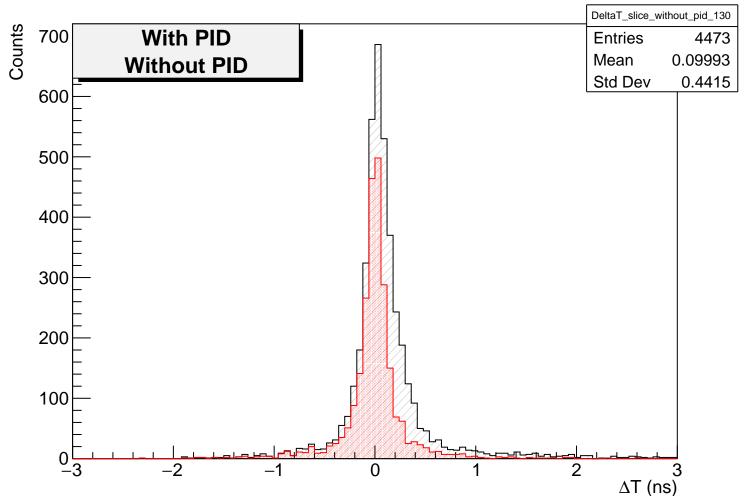
Momentum range [6.60, 6.65] GeV (Without PID)



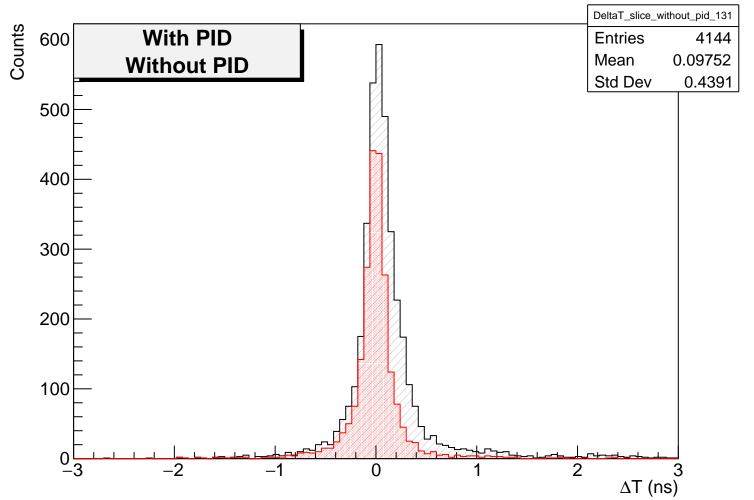
Momentum range [6.65, 6.70] GeV (Without PID)



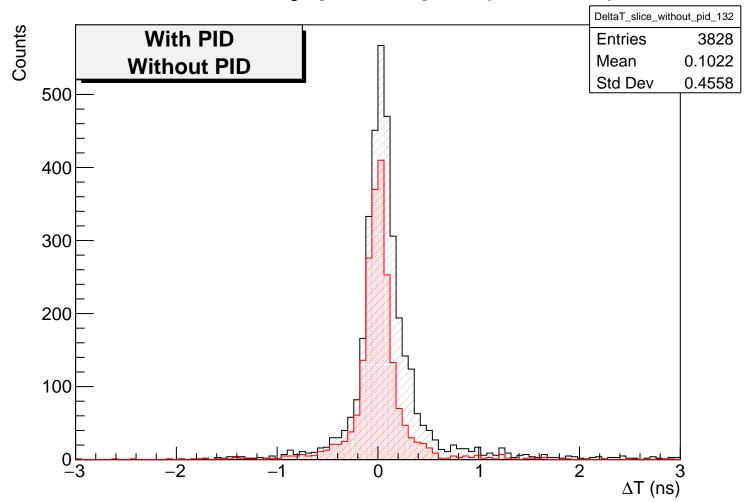
Momentum range [6.70, 6.75] GeV (Without PID)



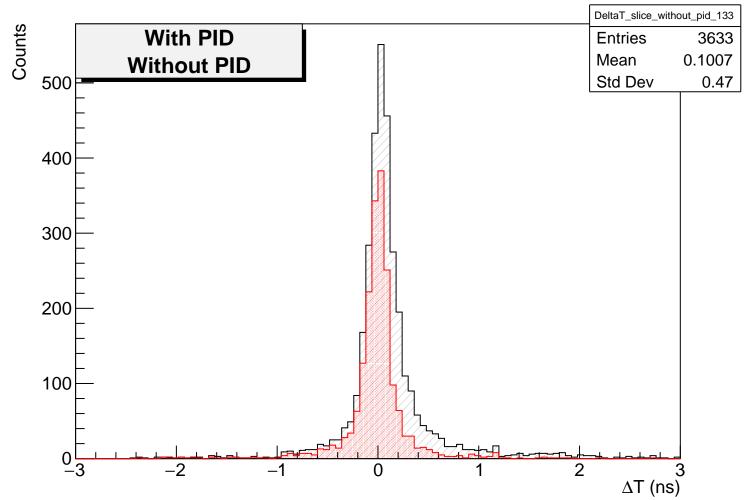
Momentum range [6.75, 6.80] GeV (Without PID)



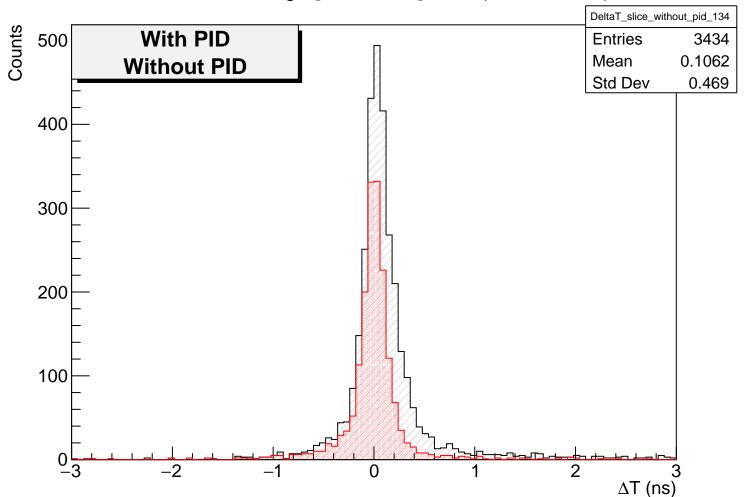
Momentum range [6.80, 6.85] GeV (Without PID)



Momentum range [6.85, 6.90] GeV (Without PID)



Momentum range [6.90, 6.95] GeV (Without PID)



Momentum range [6.95, 7.00] GeV (Without PID)

