

# $\Omega_c^0$ lifetime measurement

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$\Omega_c^0$  lifetime measurement meeting

July 12, 2019



# Outline

- Turbo ReFit PV bug
- $D^0$  MC re-weighting
- L0 efficiency

# Turbo ReFit PV bug

- Both

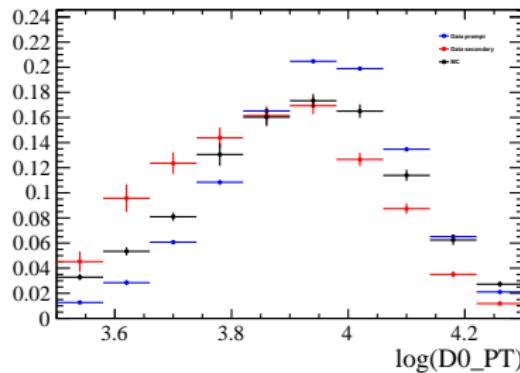
Xic0ToPpKmKmPip  
Xic0ToPpKmKmPip\_LTUNB

require ReFit PV but the refitted PVs are neither created nor persisted

- Not clear yet what the impact is

# $D^0$ MC correction

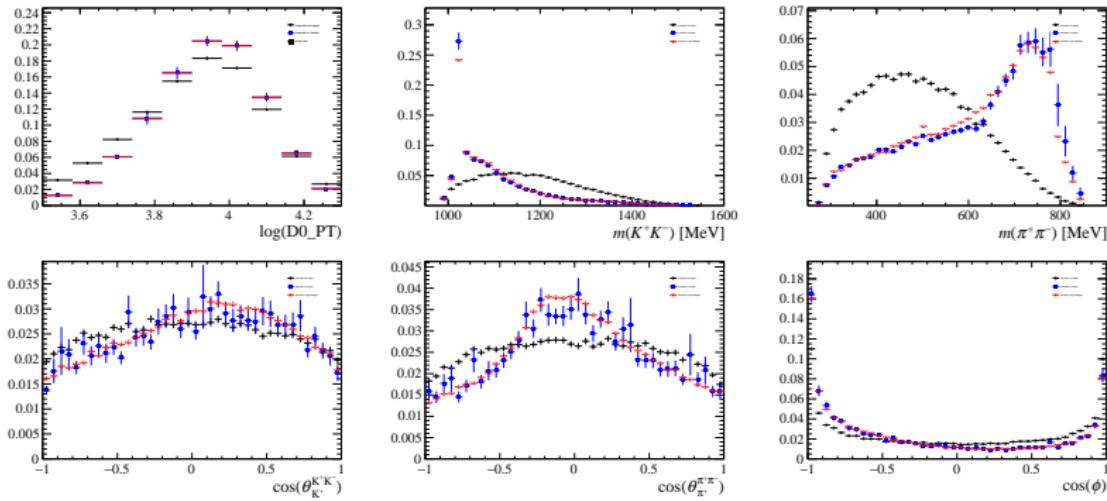
- Tracking
- PID
- L0Hadron
- Dalitz variables
- $p_T$  ( $D^0$ )



# $D^0$ MC reweighting: cut on L0Hadron

## ■ Procedure

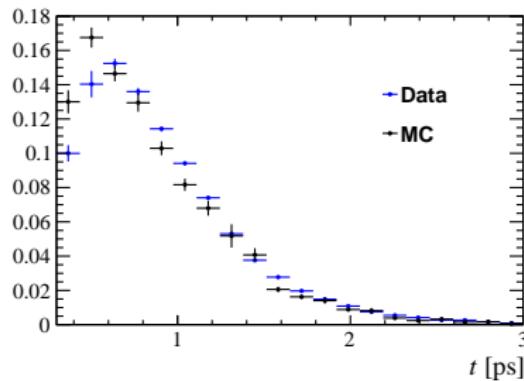
Tracking+PID ==> Dalitz ==> PT( $D^0$ )



# $D^0$ decay time distribution

- Procedure

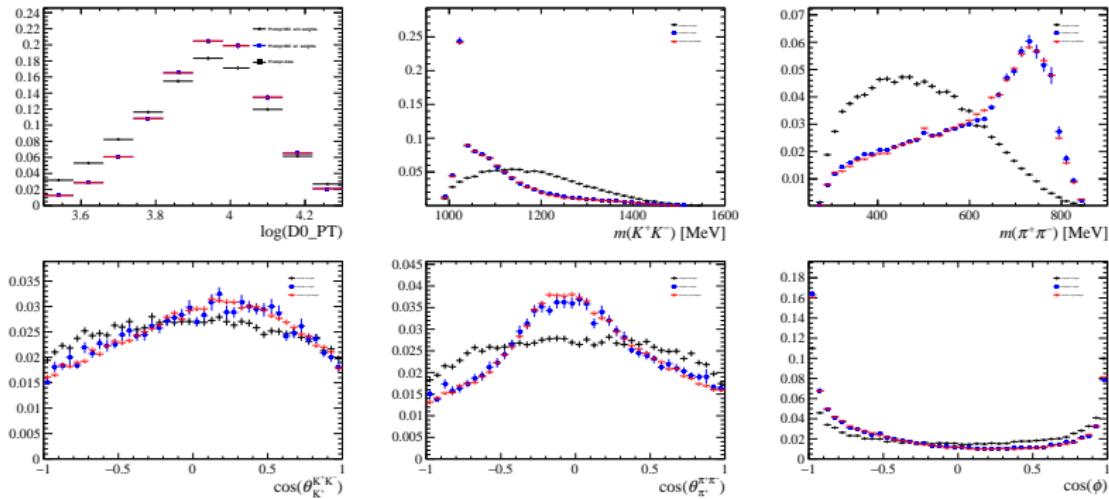
Tracking+PID ==> Dalitz ==> PT(D0)



# $D^0$ MC reweighting: L0Hadron weight

## ■ Procedure

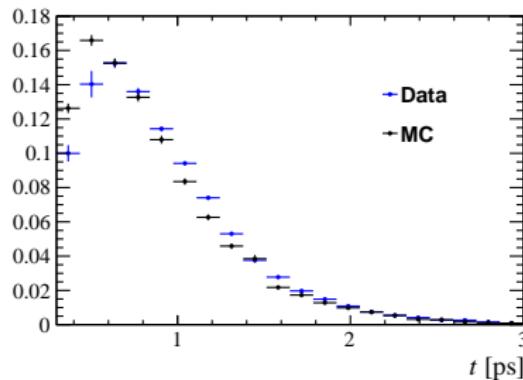
Tracking+PID+L0Hadron ==> Dalitz ==> PT( $D^0$ )



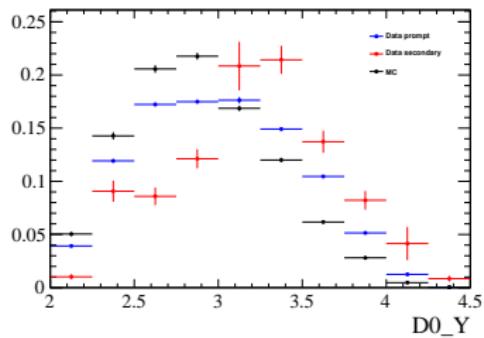
# $D^0$ decay time distribution

## ■ Procedure

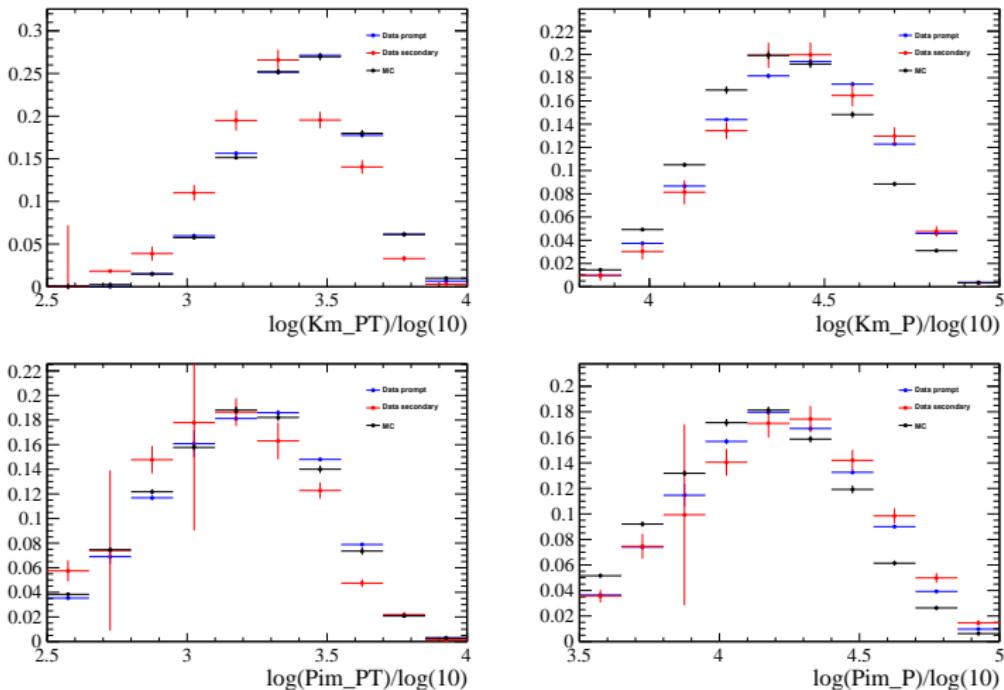
Tracking+PID+L0Hadron ==> Dalitz ==> PT(D0)



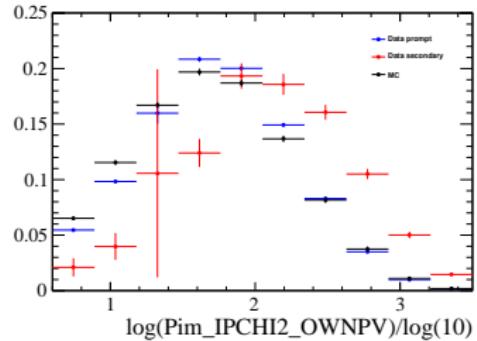
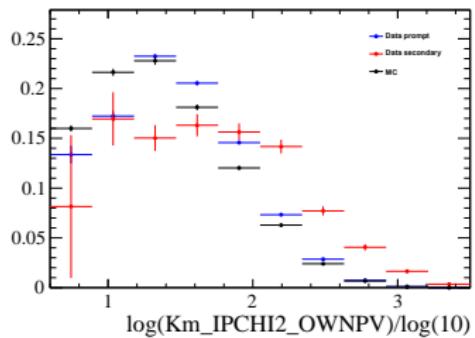
# Tracking+PID+L0Hadron ==> Dalitz ==> PT(D0)



# Tracking+PID+L0Hadron ==> Dalitz ==> PT(D0)



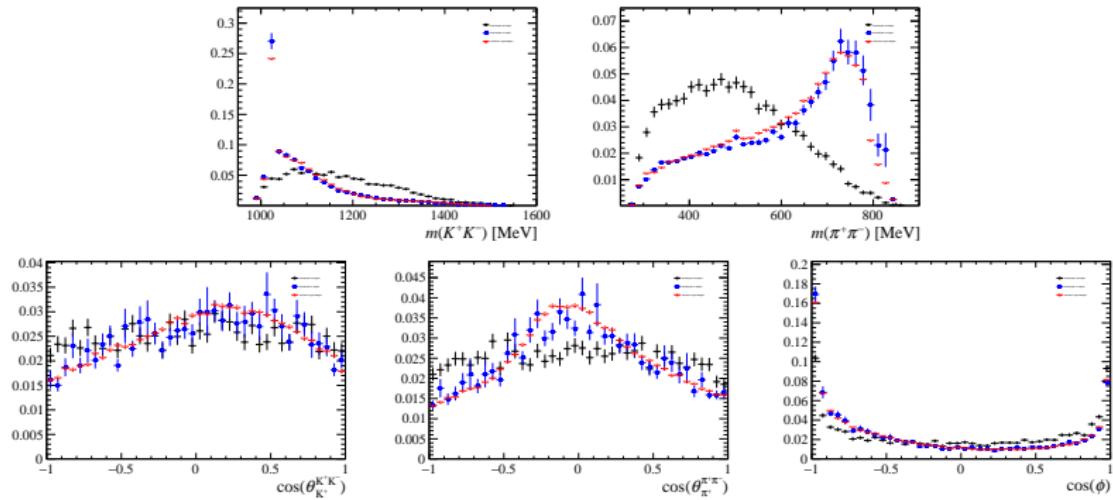
# Tracking+PID+L0Hadron ==> Dalitz ==> PT(D0)



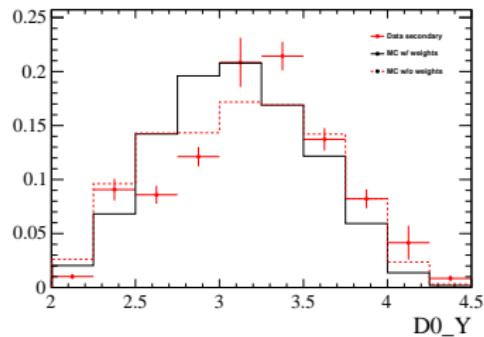
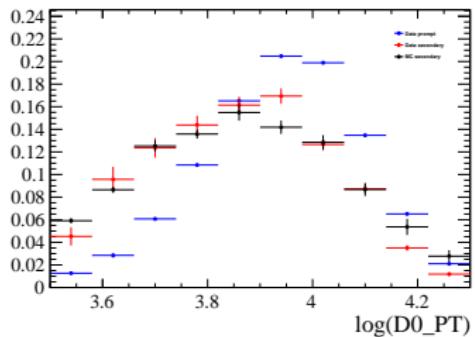
# $D^0$ secondary MC reweighting

## ■ Procedure

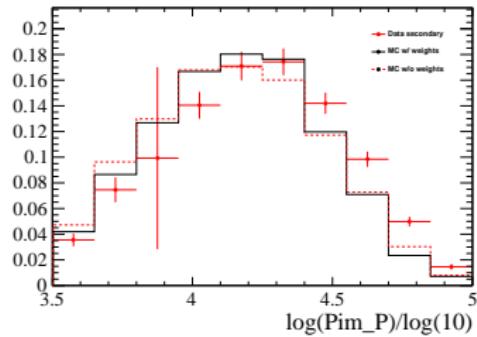
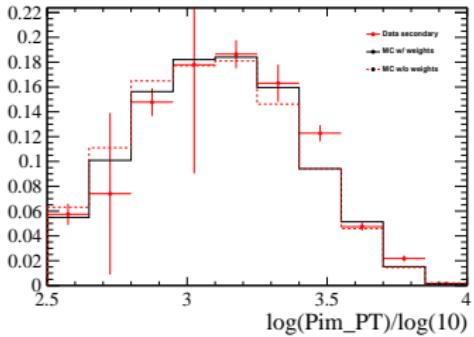
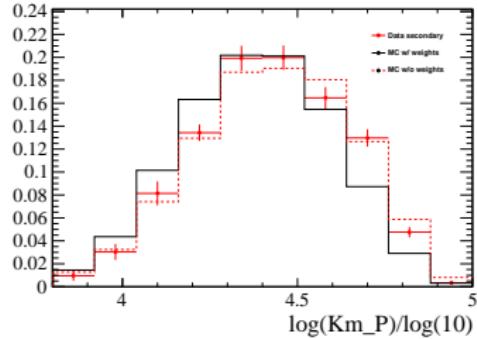
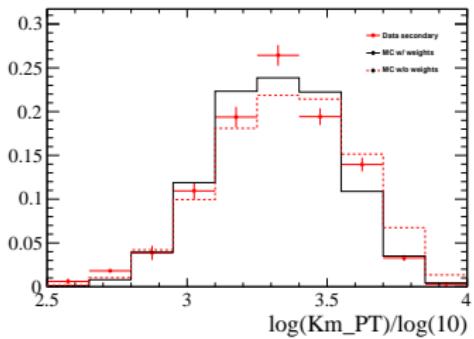
Tracking+PID+L0Hadron ==> Dalitz ==> PT(D0)



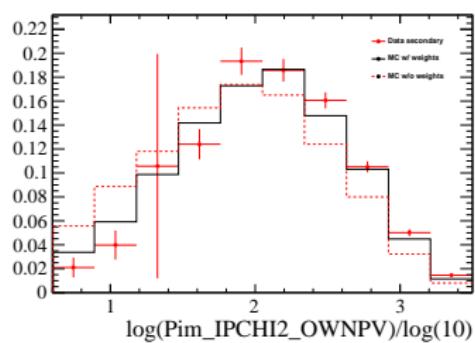
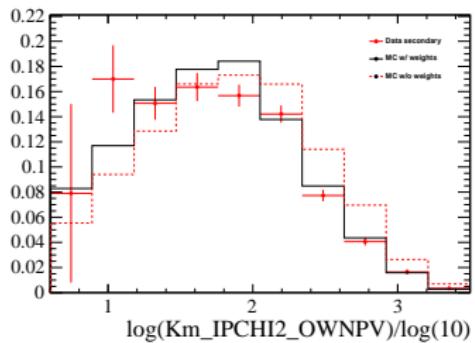
## ■ Secondary $D^0$ distributions



# Tracking+PID+L0Hadron ==> Dalitz ==> PT(D0)

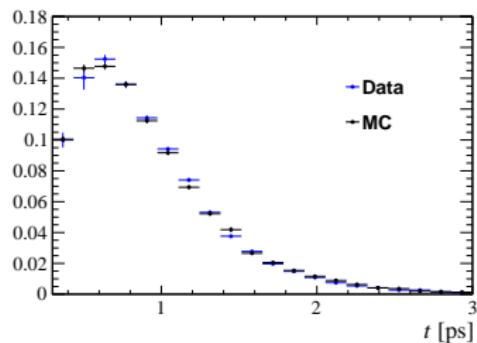
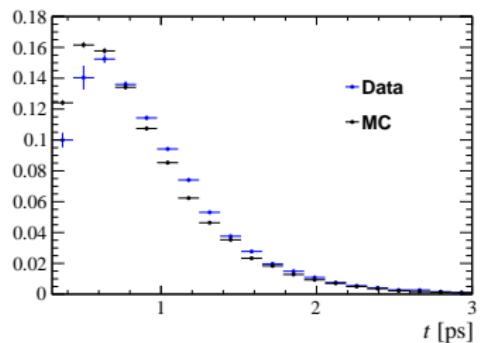


# Tracking+PID+L0Hadron ==> Dalitz ==> PT(D0)

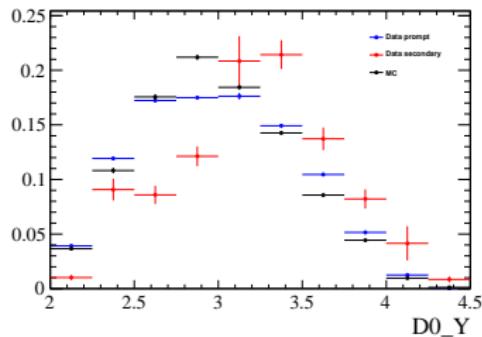


# $D^0$ decay time distribution

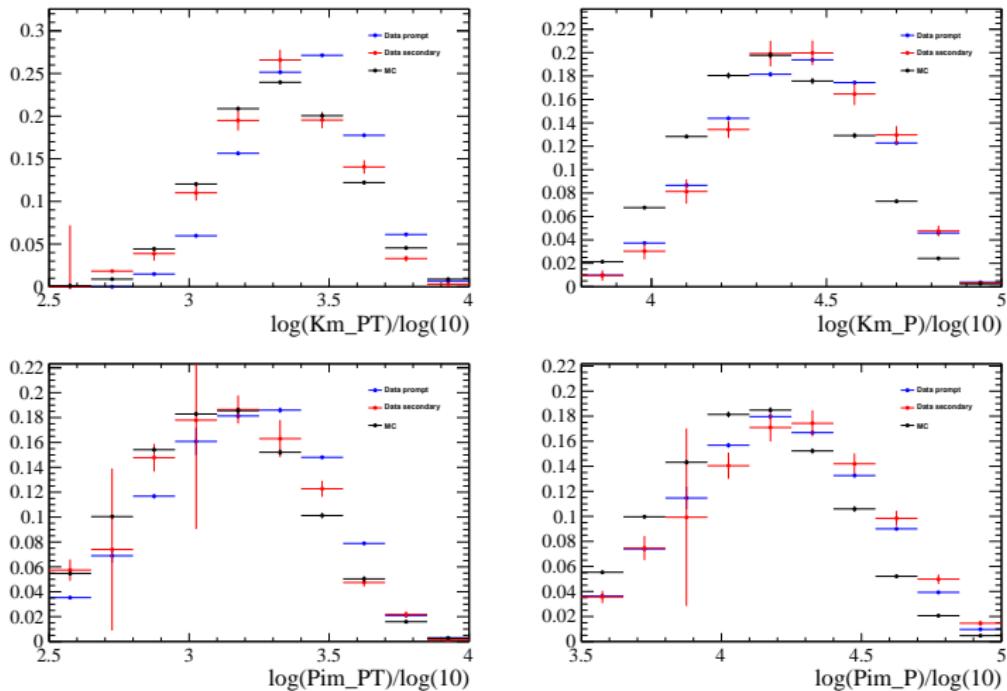
- (left) Tracking+PID
- (right) Tracking+PID+L0Hadron ==> Dalitz



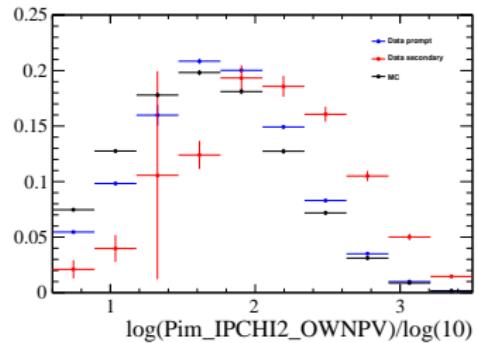
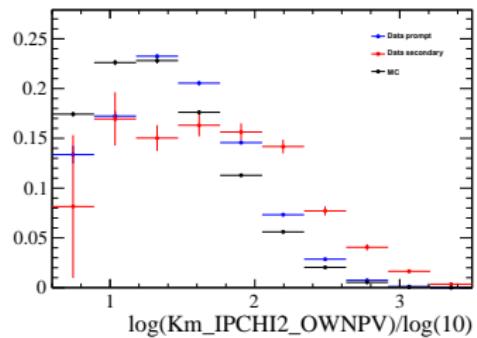
# Tracking+PID+L0Hadron ==> Dalitz



# Tracking+PID+L0Hadron ==> Dalitz



# Tracking+PID+L0Hadron ==> Dalitz

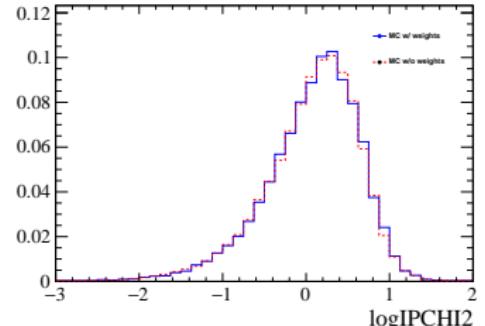
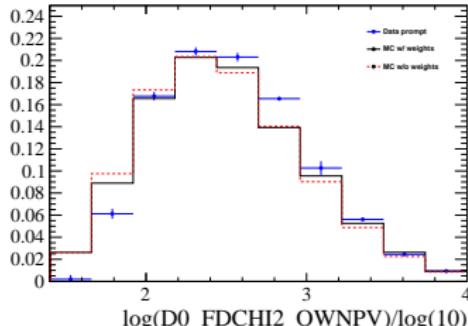
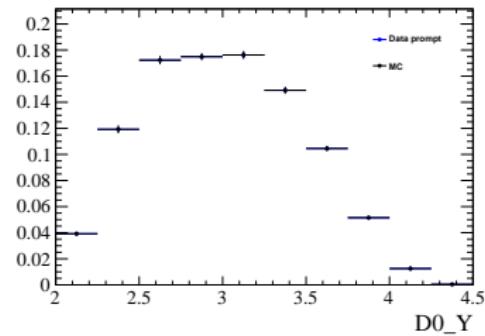
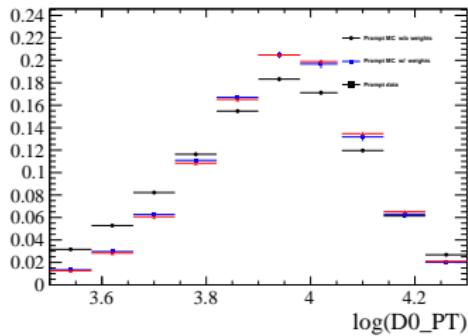


# $D^0$ MC re-weighting

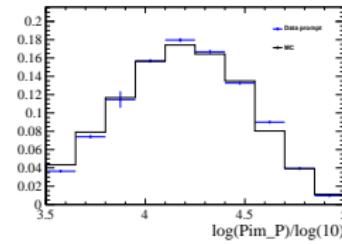
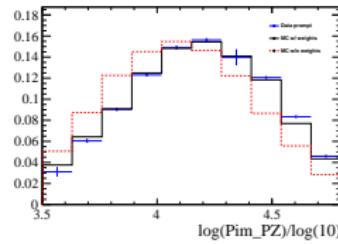
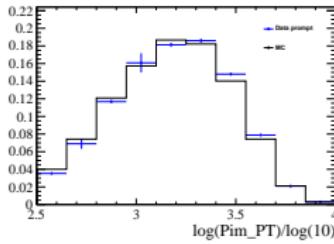
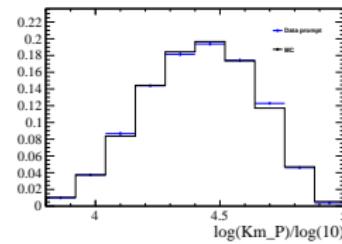
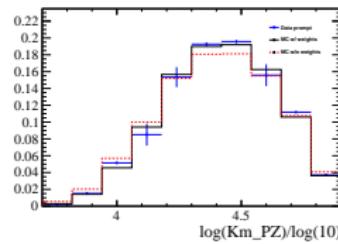
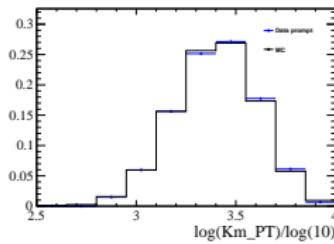
- Procedure

Tracking+PID+L0Hadron ==> Dalitz ==> PT( $D^0$ )+Y( $D^0$ )

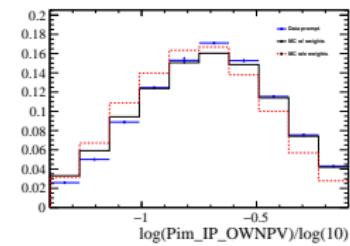
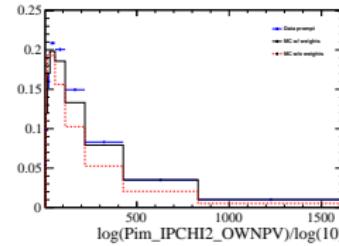
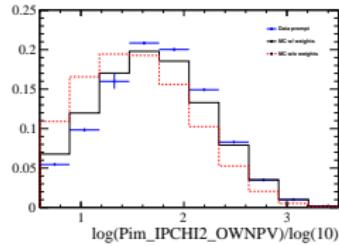
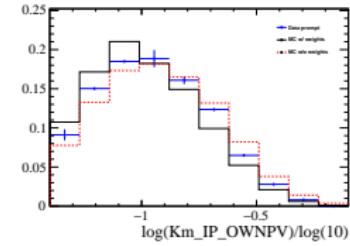
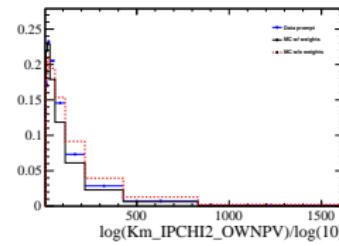
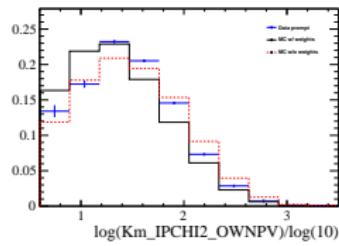
- ( $\text{PT}, \text{Y}$ ) weight converge after two iterations



# Tracking+PID+L0Hadron ==> Dalitz ==> PT(D0)+Y(D0)

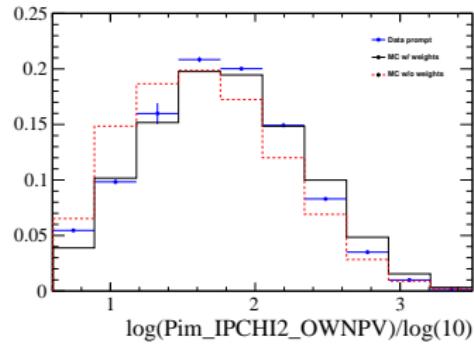
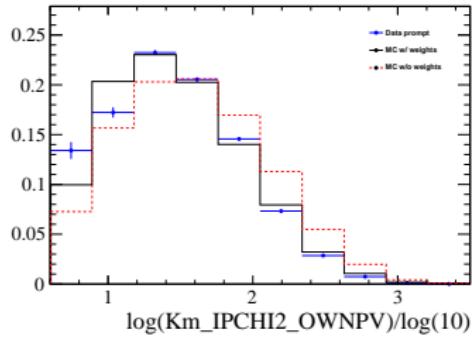


# Tracking+PID+L0Hadron ==> Dalitz ==> PT(D0)+Y(D0)

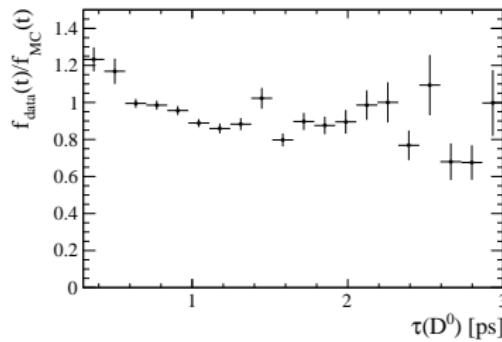
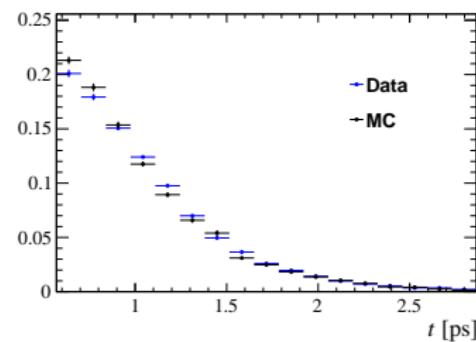
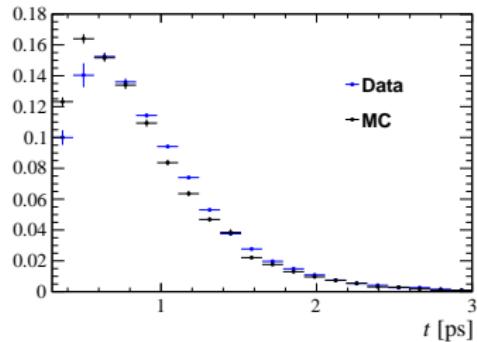


Tracking+PID+L0Hadron ==> Dalitz ==>  
PT(D0)+Y(D0)

- MC logIPCHI2 shift by +0.1



Tracking+PID+L0Hadron ==> Dalitz ==>  
PT(D0)+Y(D0)

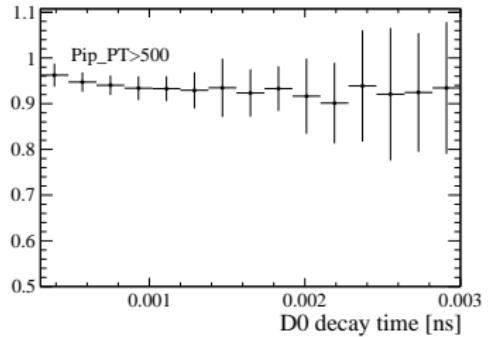
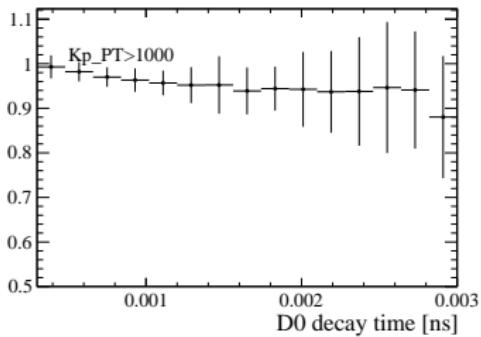
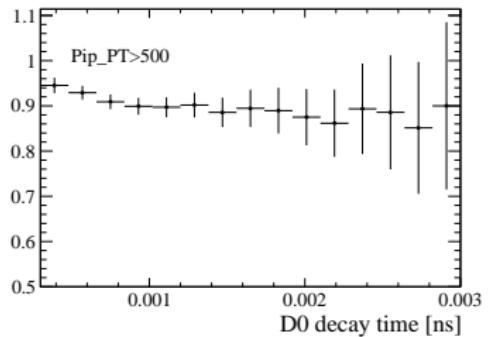
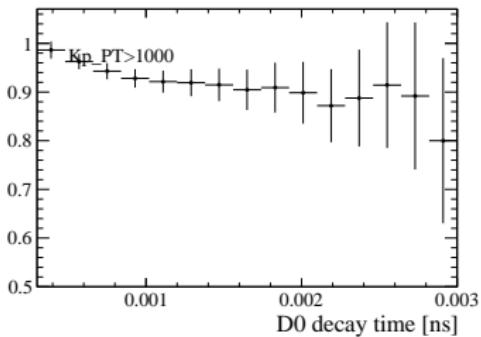


# L0 efficiency

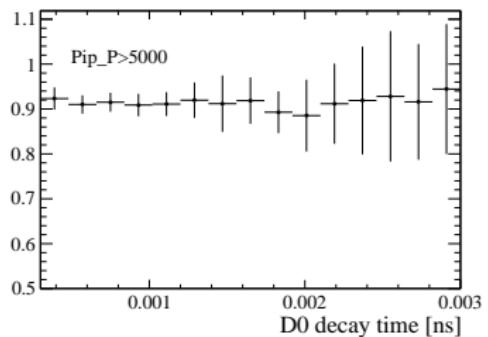
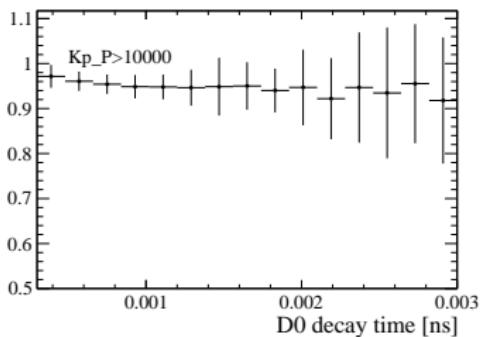
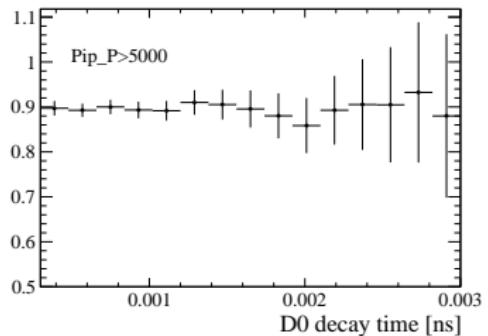
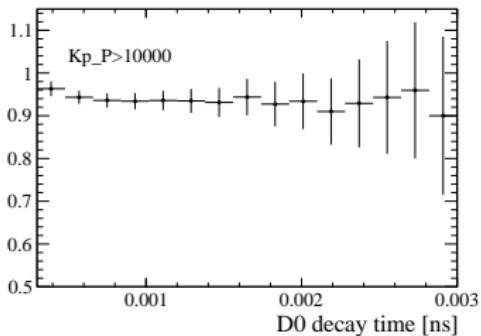
$D^0$	TOS [%]	TIS [%]
LOGlobal	14	39
LOHadronDecision	12	22
LOElectronDecision	2	16
LOPhotonDecision	0	8
LOMuonDecision	1	6
LODiMuonDecision	0	1

- The above results come from MC without trigger requirements
- For MC passing turbo line: L0HadronTOS&&LOGlobalTIS>90%

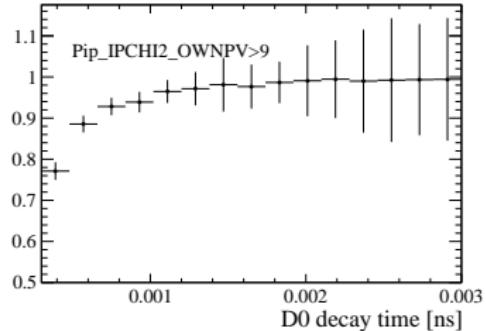
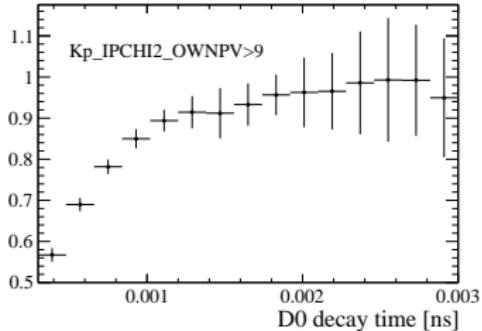
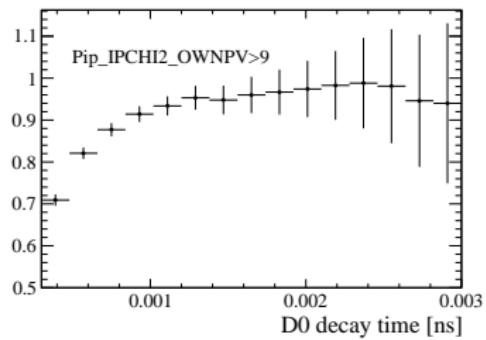
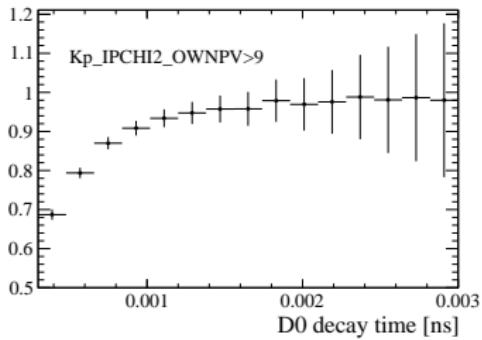
# Single cut acceptance



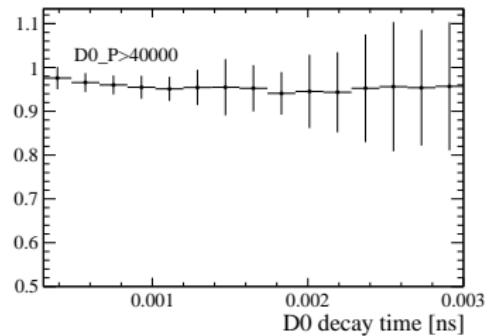
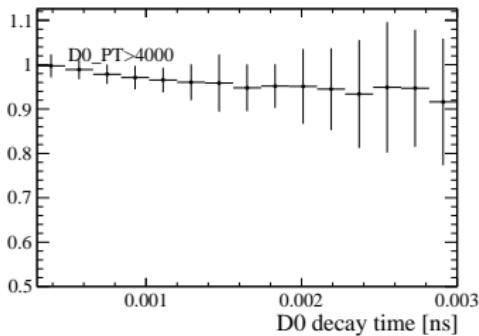
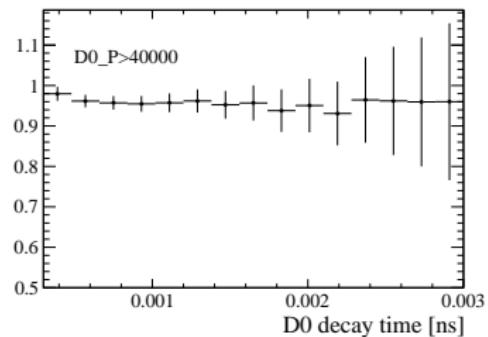
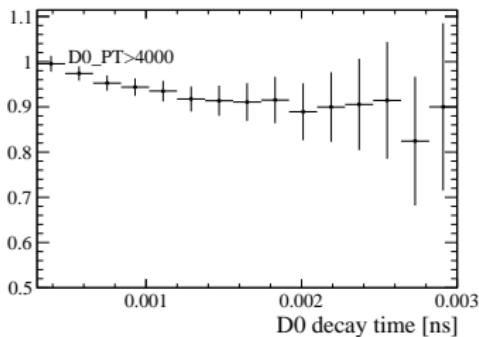
# Single cut acceptance



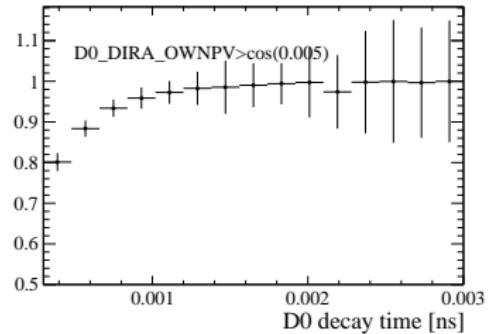
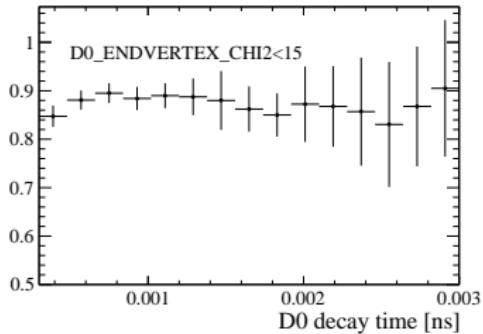
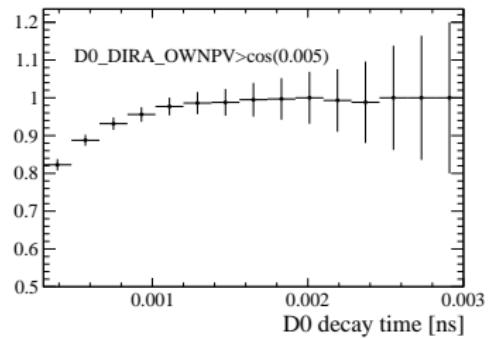
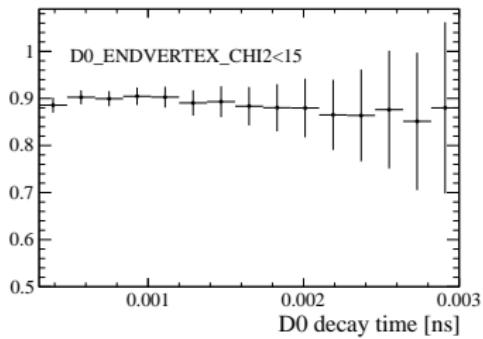
# Single cut acceptance



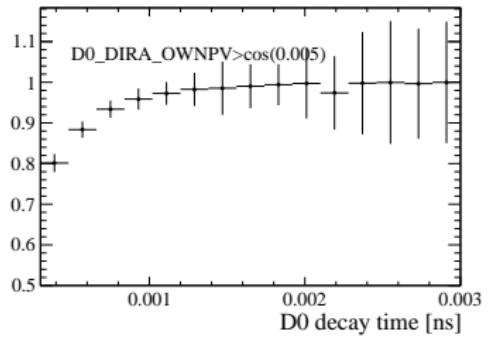
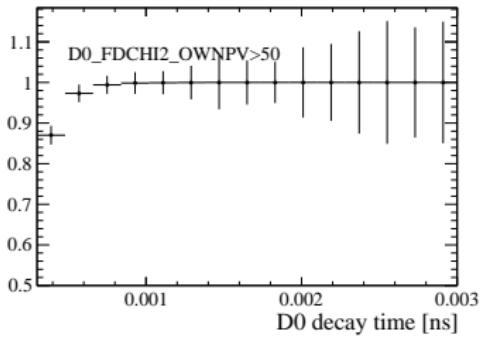
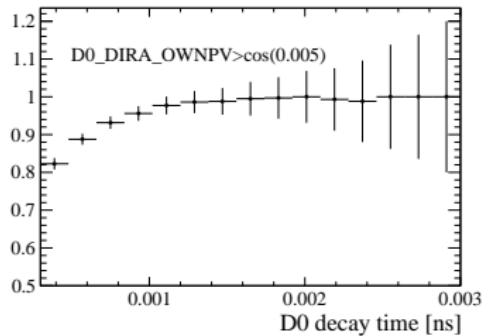
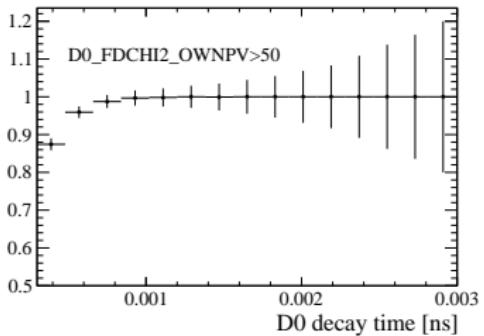
# Single cut acceptance



# Single cut acceptance



## Single cut acceptance



# Single cut acceptance

