few more explanations:

But as usual, I have still few question to better understand your definition of impurity.
$pi\_imp = PID_{e} > X / pi\_all$
I can understand about the nominator, that is reconstructed true pion, which is tested MC true
PID matching.

I'm wondering about the $PID_{e} > X$.
Is it "selected true pion after doing MC PID match and requiring PID probability"
or
"any kind of tracks just passed given probability condition"?
I am not clear for this which one have to be applied to see whatever impurity or misID.

in both case i select MC true pions.
pi_all - are all TRUE MC pions without any condition on PID
PID_{e} - are TRUE MC pions with condition on PID of being electron

i hope that soon we will come to the common point with definitions