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# Non-Prompt Jpsi Analysis

PbPb @ 5.02 TeV



ALICE

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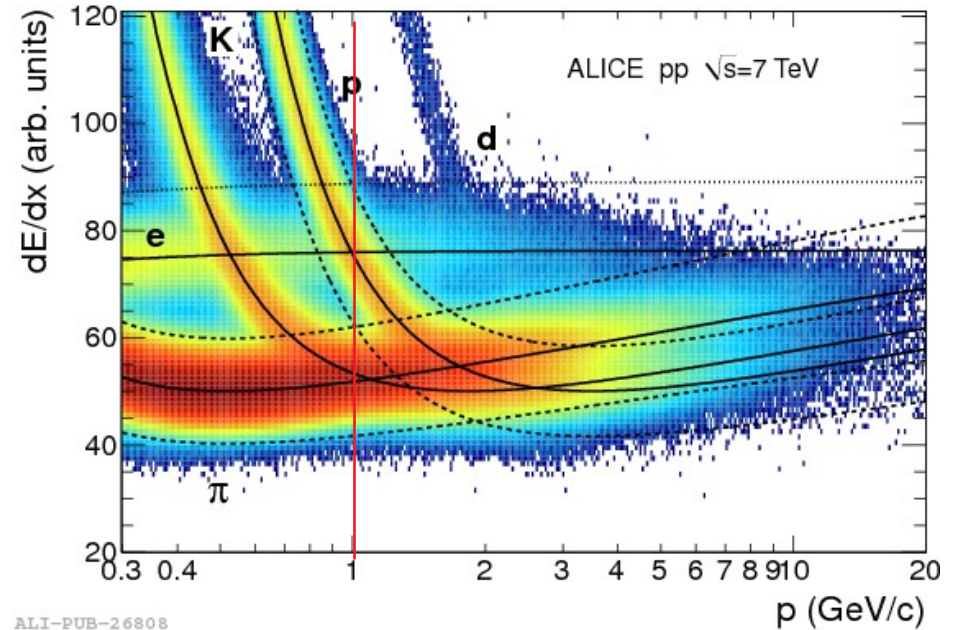
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# Looking at TPC-PID

(This plot is just to understand the PID cuts, has no relation with this analysis)

- Signal of Interest is **Electron**
- At 1GeV : Strong contamination with **Proton** (the **Red vertical line**)
- It needs to be saperated.
- In the range  $< 1$  GeV : Mixing with **Kaons**
  - Can be removed using  $P > 1$ GeV Strong Cut
- Around  $\sim 10$  GeV, contamination of **Pions** and **Kaons, Protons**



## ESD to dstTree Cuts :

### J/psi candidate electron

- $P > 1.0$
- Eta [-0.9,0.9]
- $\text{TPCnSigma} < |4.0|$  for electron (Inclusion)
- $\text{TPCnSigma} [-4.0,+1.0]$  for proton (Exclusion)
- $\text{DCAxy} [-1,+1]$ ,
- $\text{DCAz} [-3,+3]$ ,
- $\text{nTPCcls} [70,161]$
- ITSrefit,
- TPCrefit

### Basic electron cut to be used for prefilter

- Eta [-0.9,0.9]
- $\text{TPCnSigma} < |4.0|$  for electron (Inclusion)
- $\text{TPCnSigma} < |2.0|$  for pion (Exclusion)
- $\text{TPCnSigma} < |2.0|$  for kaon (Exclusion)
- $\text{ImpactParXY} [-2,+2]$ ,
- $\text{ImpactParZ} [-3,+3]$ ,
- $\text{nTPCCls} [70,160]$ ,
- ITSrefit,
- TPCrefit

## Low-Mass Resonance Cuts

- TPCpid cut [-4,+4]
- $\text{NTPCcls} [70,160]$
- TPCrefit, ITSrefit

### Lambda-P

- $P > 0.8 \text{ GeV}$
- $\text{Eta} < |1.6|$

### Lambda-Pi

- $P > 0.12 \text{ GeV}$
- $\text{Eta} < |1.6|$

### K0s $\rightarrow$ PiPi

- $P > 0.9 \text{ GeV}$
- $\text{Eta} < |1.6|$

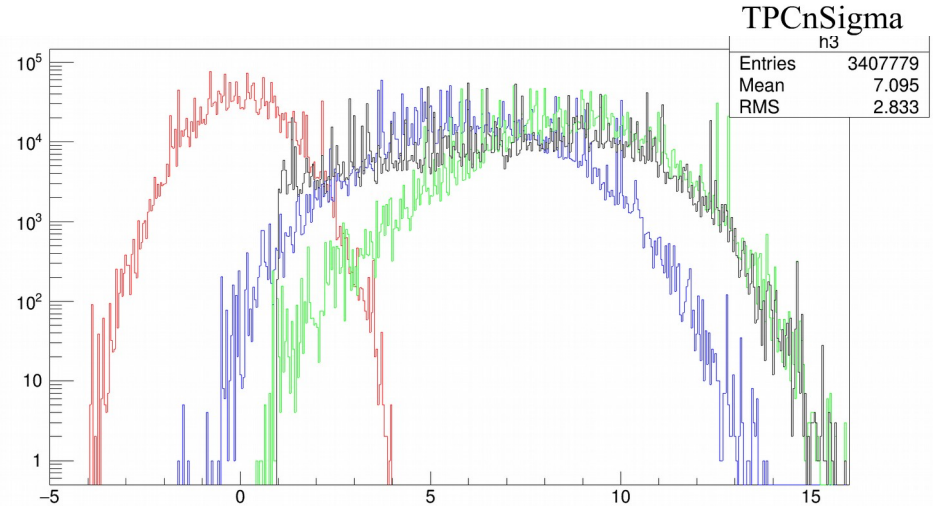
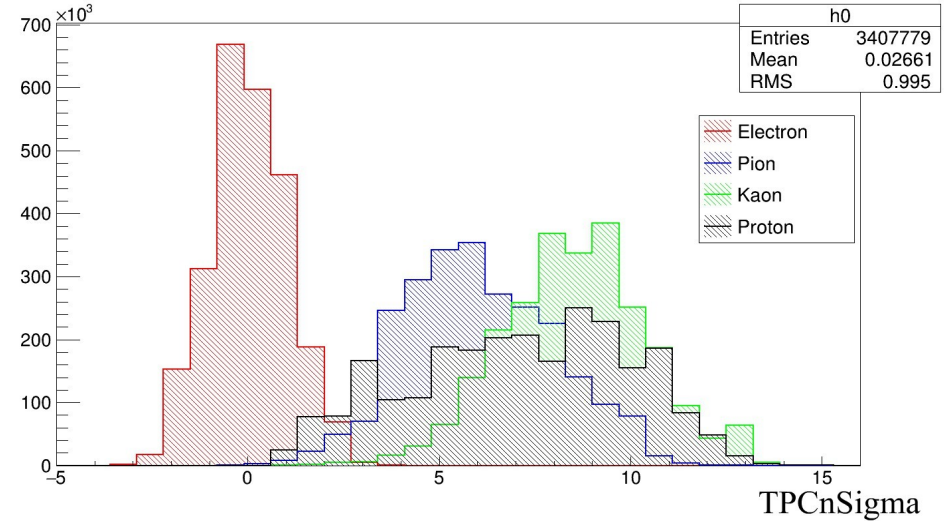
### Gamma2ee

- $P > 0.7 \text{ GeV}$
- $\text{Eta} < |1.2|$

# Number of sigmas to the dE/dx line in the TPC in the dstTree

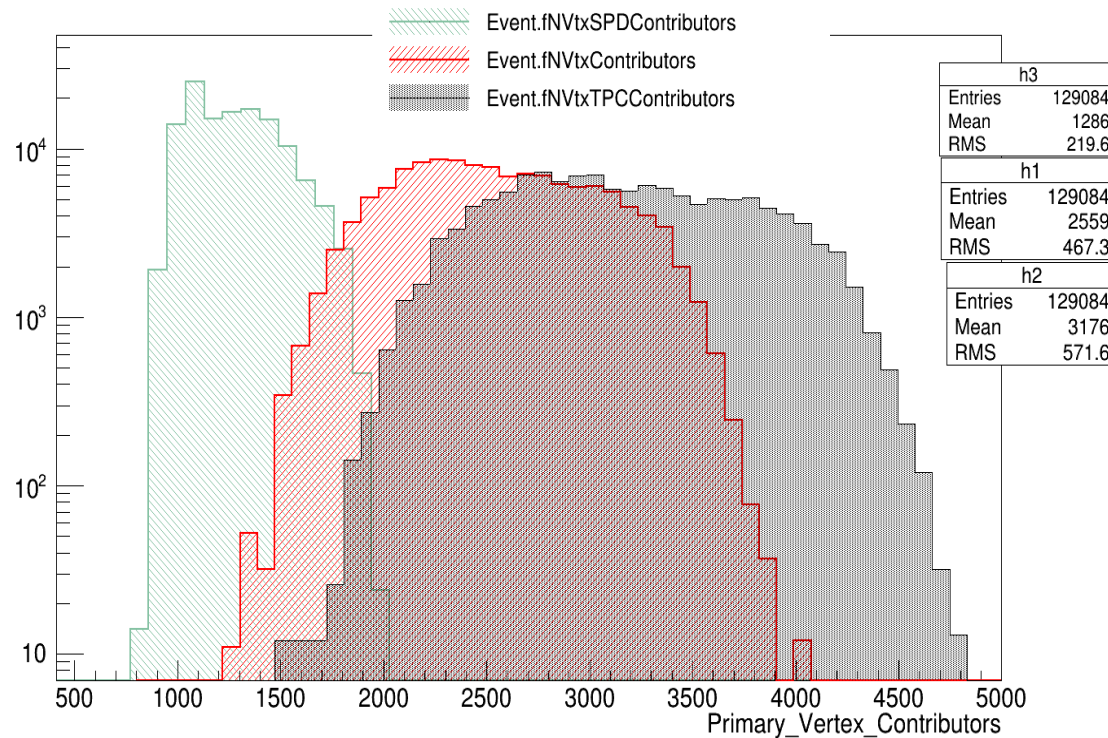
- For MC : 5 good runs
- TPC[n\_sigmas] for particles dstTree
- Electrons [-4,+4] – sigma
- Protons [-4,+1] – sigma
  - No proton contamination until +1 sigma

- Contamination to the electron sample :
  - Pion : 14.8%
  - Kaon : 1.1%
  - Proton : 17.8%calculated using the overlapping statistics
  - Total Cont. of (Pi, K, p) : 33%



# Primary Vertex Contributors :

- Tracks contributing to the primary vertex.
- This Information is filled in the Trees (Event-wise)
- Plots from MC-trees
- Calculated using AliVVtx class
- Why Less for SPD??



## Cuts for reconstructing J/psi Meson :

### Standard Kinematic Cuts

- $p_T$  : [1,30]
- Eta : [-0.9, +0.9]
- DCAxy [-1,+1]
- DCAz [-3,+3]
- Kink rejection
- ITS-Refit, SPDany, ITSChi2 [0,36]
- TPC-Refit, TPCchi2 [0.1,4]
- TPCnCls [70,160], TPCnclsSharedRatio [0.3, 2]

### TPC::PID cuts

- $TPCnSigma < |3.0|$  for **di-electron** Inclusion
- $TPCnSigma > |3.5|$  for **Proton-Pion** Exclusion

### Pair-kinematic cuts

- $Pt$  : [0,100] GeV/c
- Eta [-0.9,0.9]
- Mass [2,4] GeV/c<sup>2</sup> → **M(J/psi) : 3.096 GeV/c<sup>2</sup>**

### Prefilter-pair cut

- $Pt$  :: 0.9 – 1000 GeV
- 0-50 MeV Mass Exclusion

### MC signal J/psi :

#### Mother J/psi

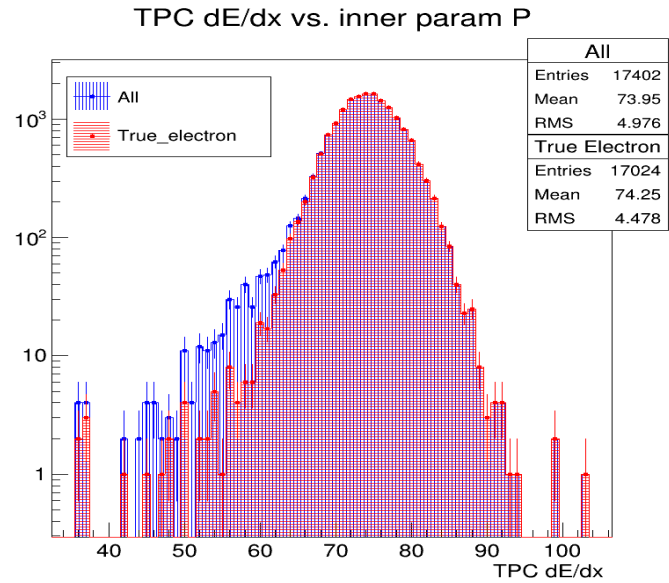
- Rap : [-0.9, +0.9]

#### Daughters-Legs

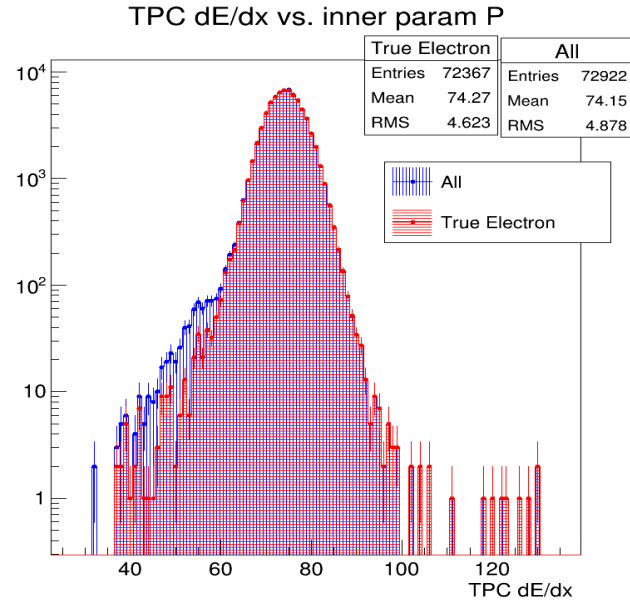
- $Pt$  : [1,100] GeV
- Eta : [-0.9, +0.9]

# TPC Signal for True electron in MC

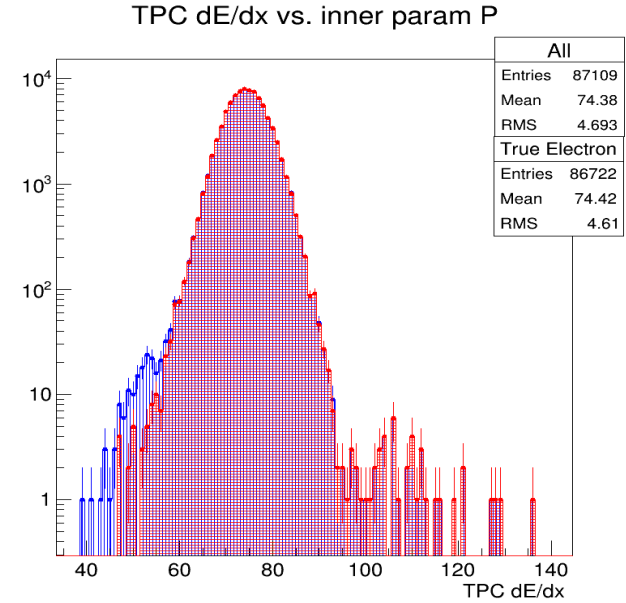
- Tracks after all standard Cuts



4 < Pin < 10 GeV



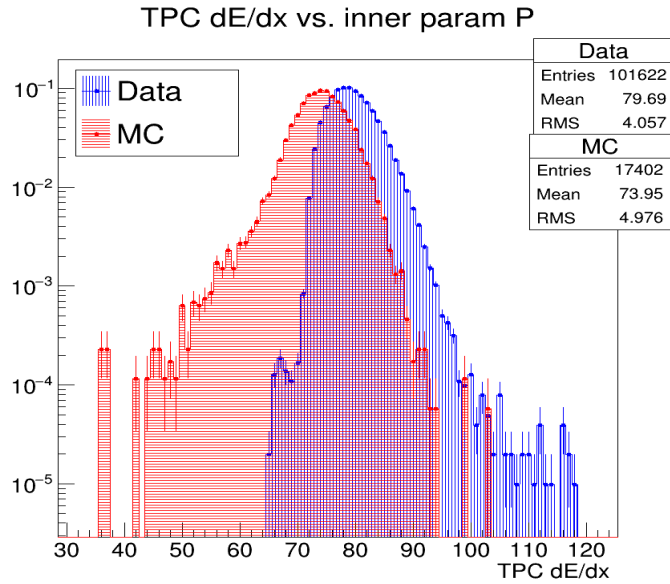
2 < Pin < 4 GeV



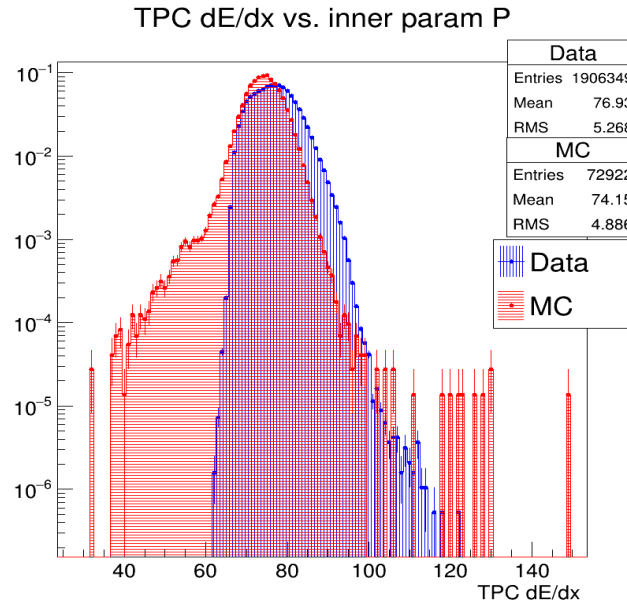
1 < Pin < 2 GeV

# TPC Signal for Data and MC

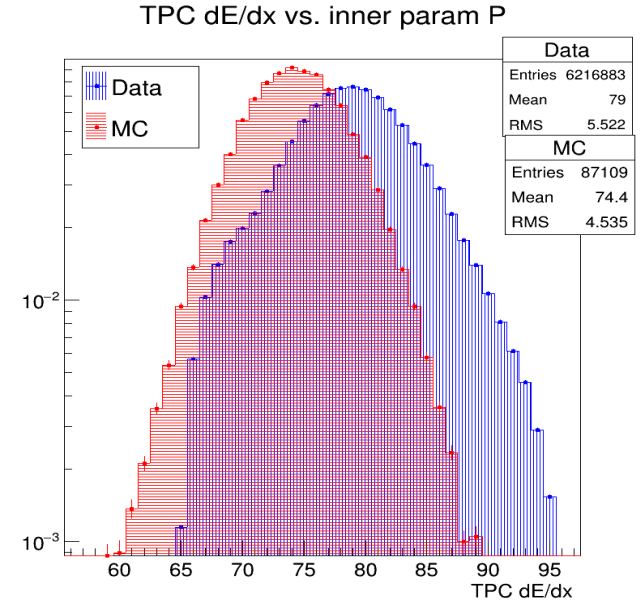
- Tracks after all standard Cuts



4 < Pin < 10 GeV



2 < Pin < 4 GeV

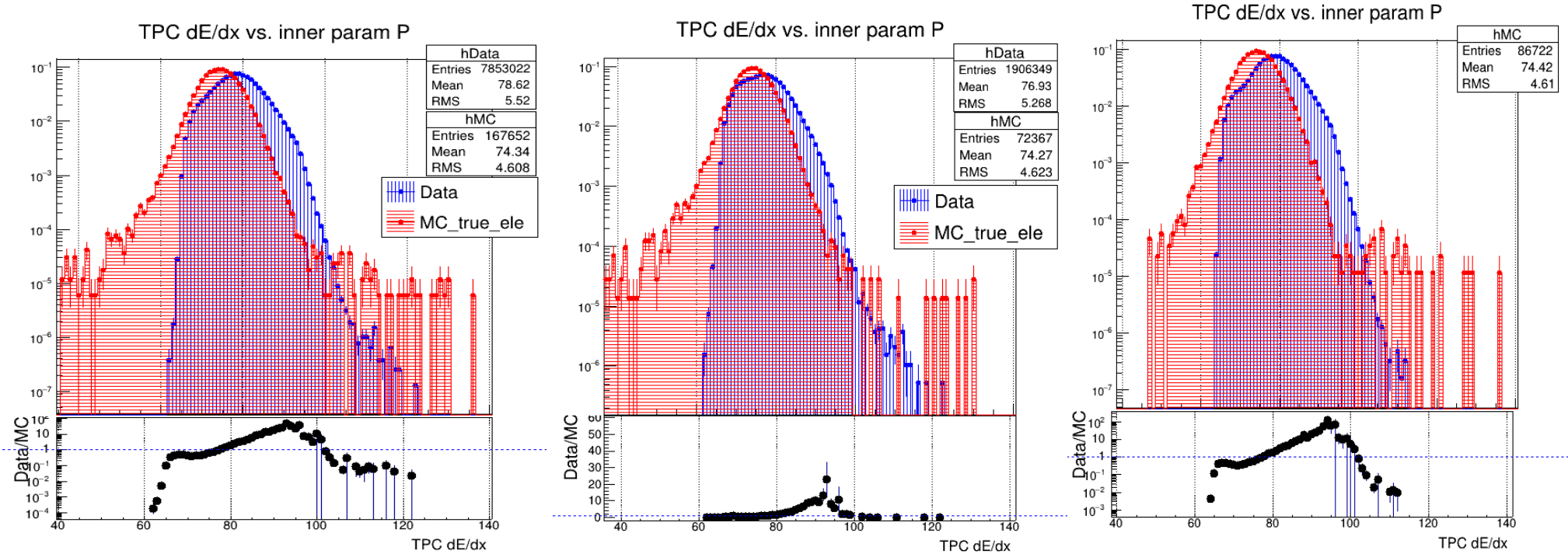


1 < Pin < 2 GeV



# TPC Signal for Data and MC\_true\_electron

- Tracks after all standard Cuts



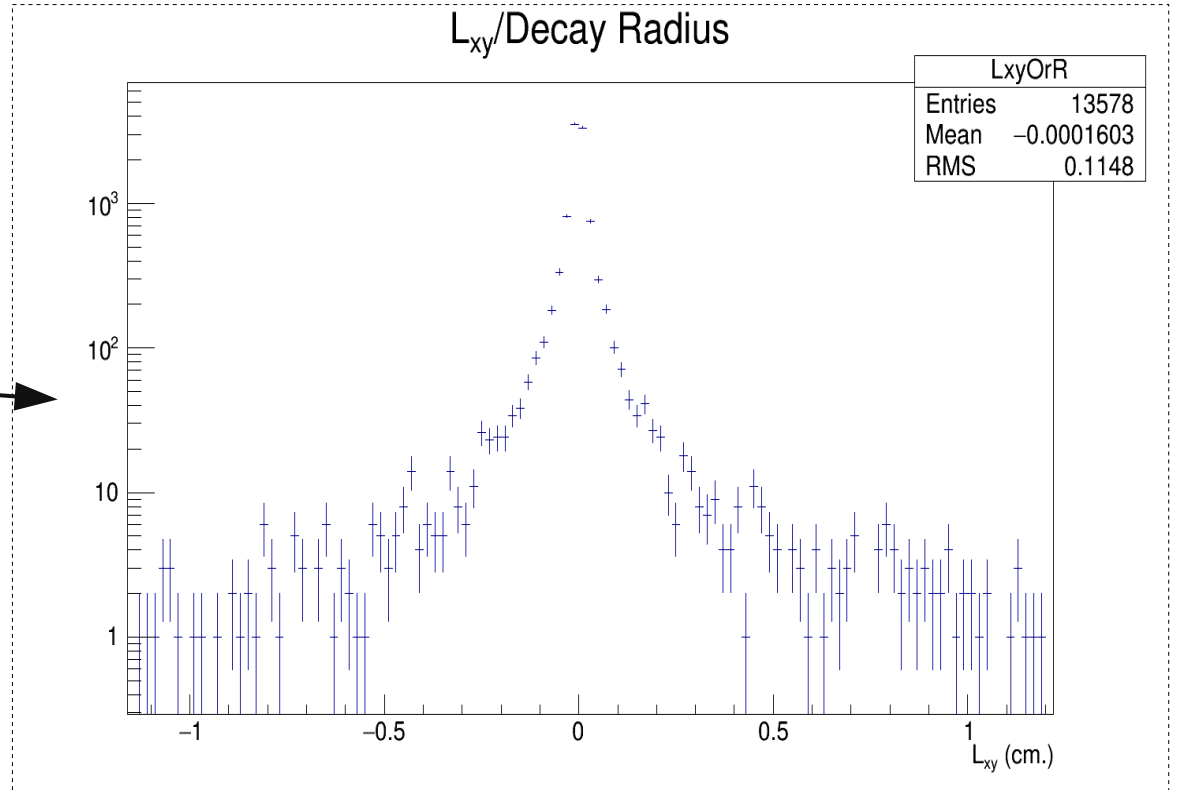
1 <  $P_{in}$  < 10 Gev

2 <  $P_{in}$  < 4 Gev

1 <  $P_{in}$  < 2 Gev

## Filtering the Trees (Discussion in the meeting with Ionut)

- Trees can be filtered more using the “FilterTrees” task.
- Filtering fills the fCandidates\*-branch in the trees
- But the Other branches are Empty.
- Lxy-Distribution for MC (cannot judge anything from this distribution, it was a test run)
- Filtering the Data results dramatically wrong distribution!



# Back-Up

- $P > 1$  is applied but using 3-momentum  $< 1$  GeV spectrum can be seen.
  - For K,P,Pi :  $P > 1$  GeV is TRUE
  - But for e :  $P < 1$  is there, when I made cut on  $P > 1$ , stats reduced significantly
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- TOF pid is missing in present Trees
- No trees can be produced last week, Grid has problems.
- For Data – Single Run
- For MC - 5Runs