

Ali Fahim

**SUSY REFERENCE ANALYSIS RA6**  
**OPPOSITE-SIGN DI-LEPTONS**  
**PROGRESS REVIEW**

# Muon Selection

## Muon Selection

Global Muon Prompt Tight

Pt > 20 GeV

$|\eta| < 2.1$

Rel-Isolation < 0.1

$(\mu.\text{hcallso}() + \mu.\text{ecallso}() + \mu.\text{tracklso}()) / \mu.\text{pt}()$

D0 < 0.2

Impact Parameter from Beam Spot

$\mu.\text{combinedMuon}().\text{get}().\text{dxy}(\text{PrimaryVertex})$

$\chi^2 / \text{dof} < 10$

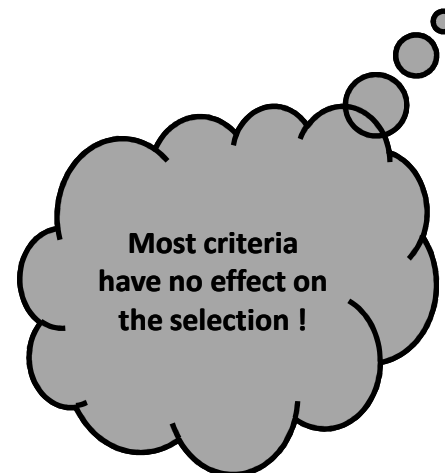
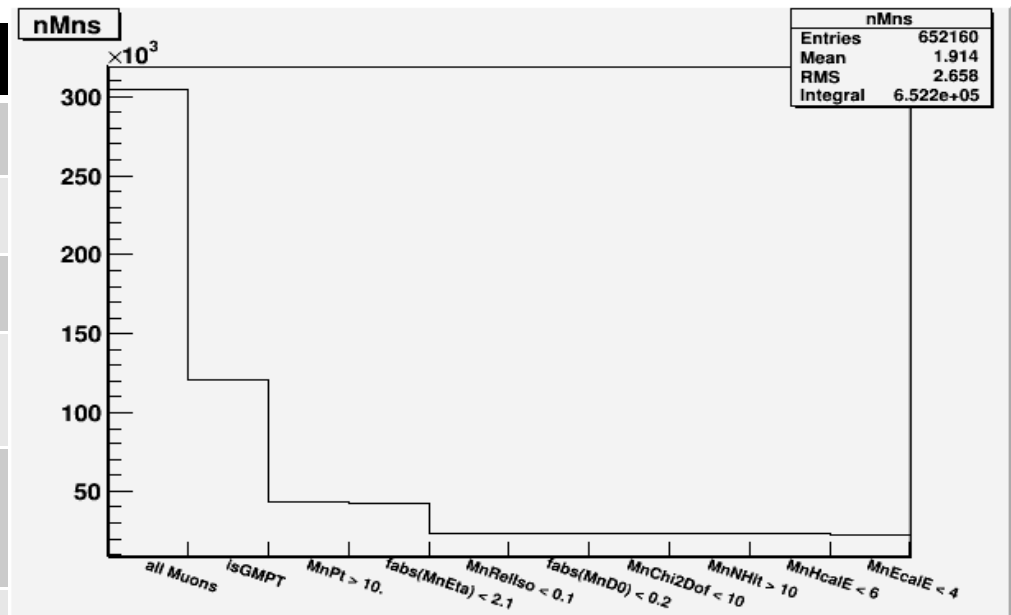
N hits > 10

hCalCandE < 6

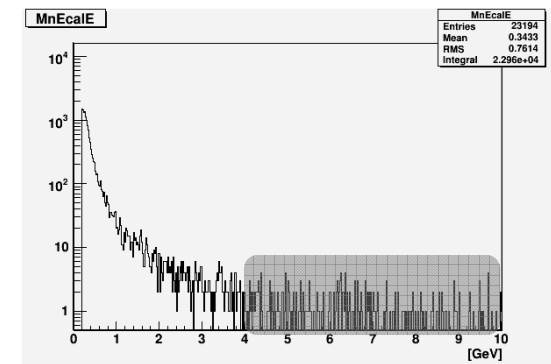
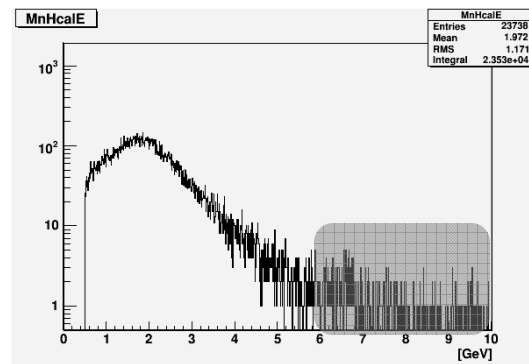
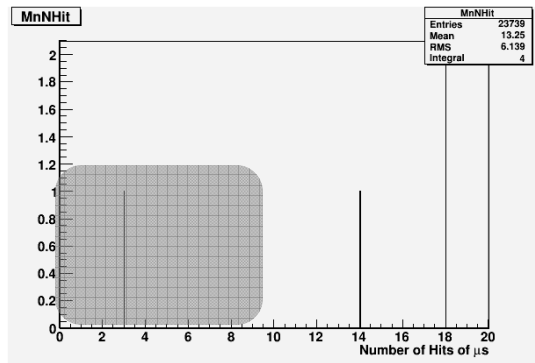
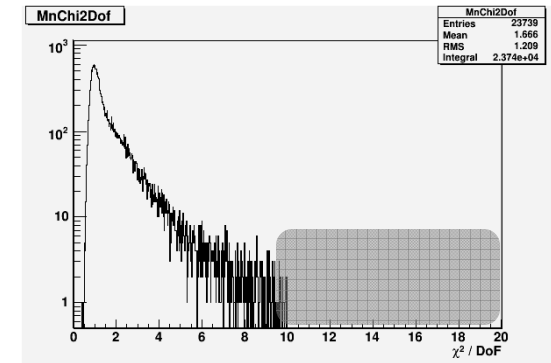
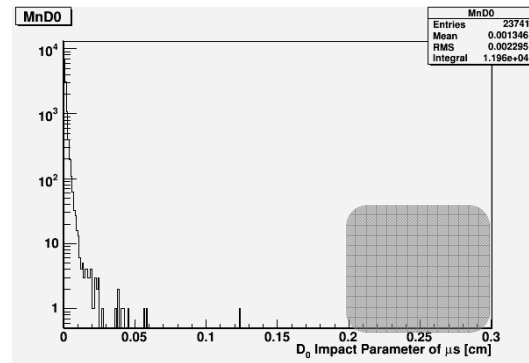
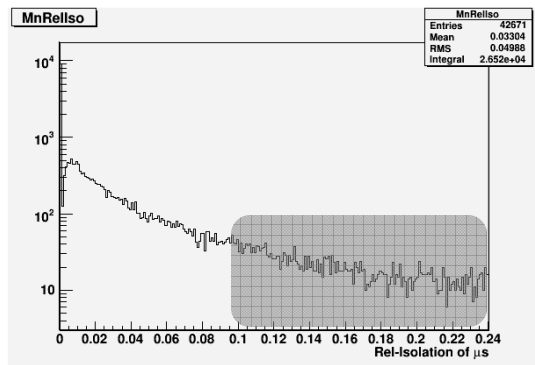
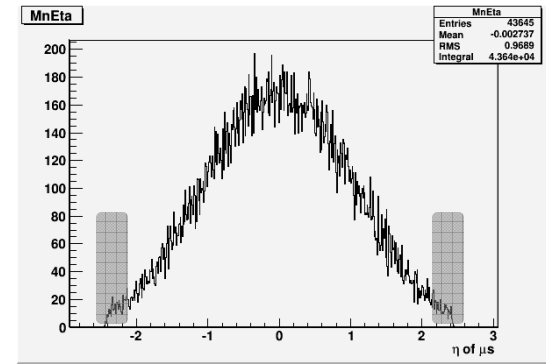
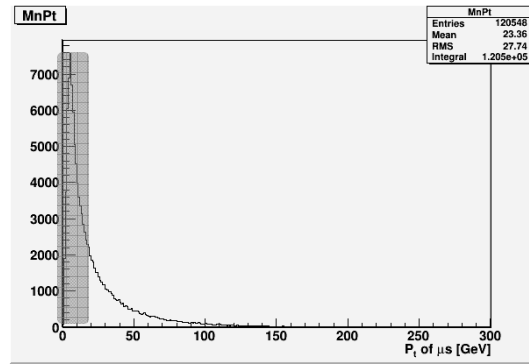
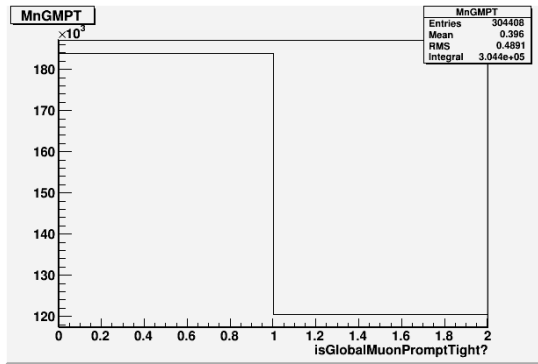
$\mu.\text{hcallsoDeposit}().\text{candEnergy}()$

eCalCandE < 4

$\mu.\text{ecallsoDeposit}().\text{candEnergy}()$



# Muon Selection



# Electron Selection

## Electron Selection

Pt > 20 GeV

$|\eta| < 2.5$

Electron.electronID("eidRobustTight")

Rel-Isolation < 0.1

$(\mu.hcallso() + \mu.ecallso() + \mu.trackIso()) / \mu.pt()$

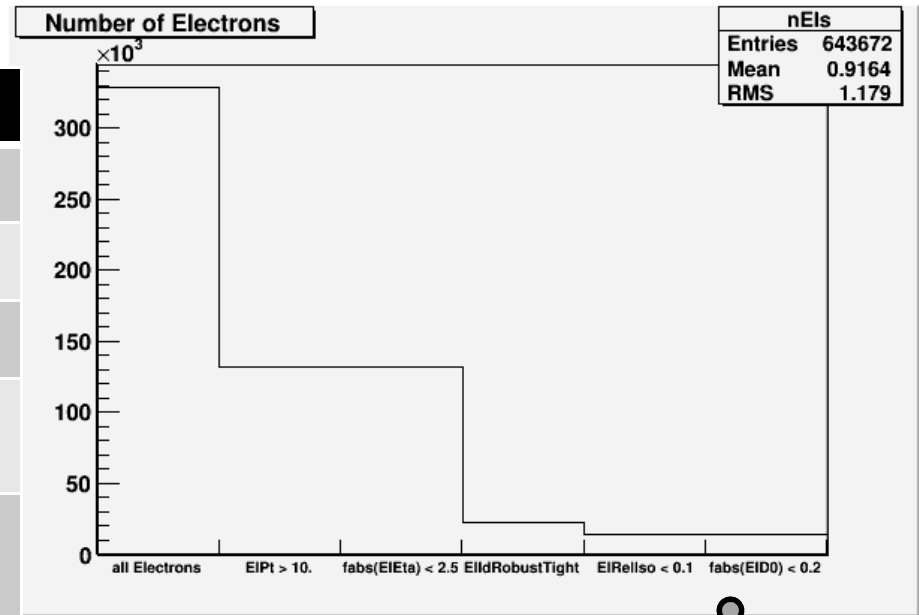
D0 < 0.2

Impact Parameter from Beam Spot

$\phi = E.gsfTrack().get() \rightarrow \phi();$

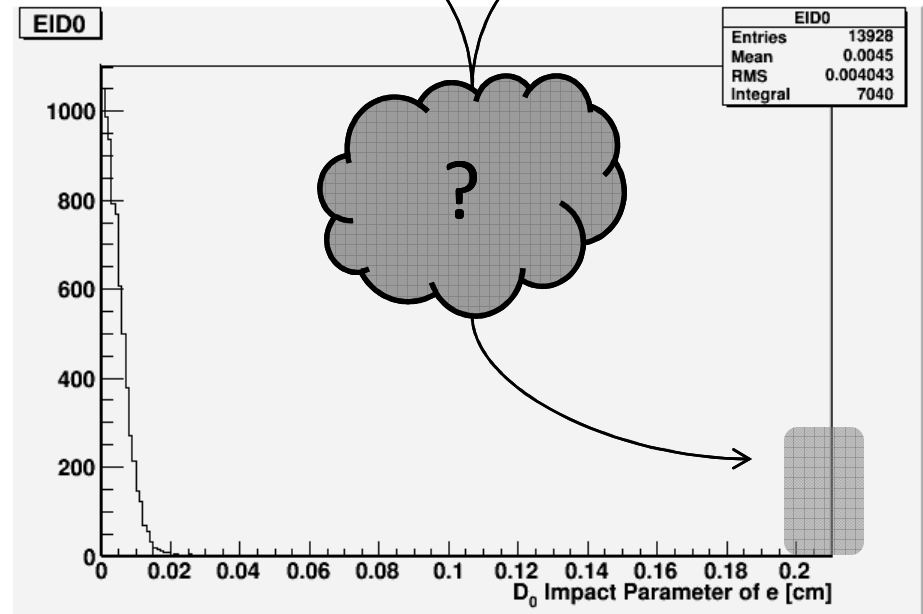
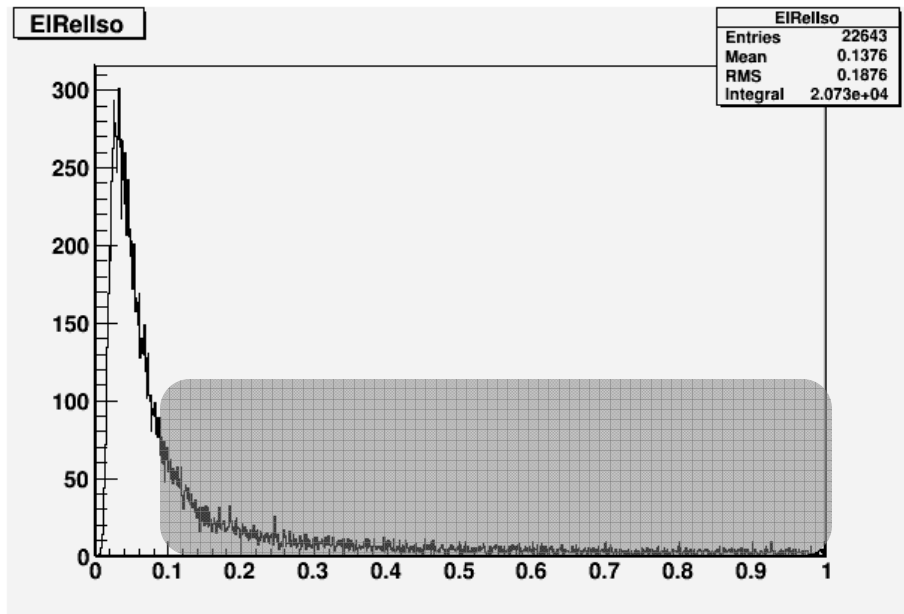
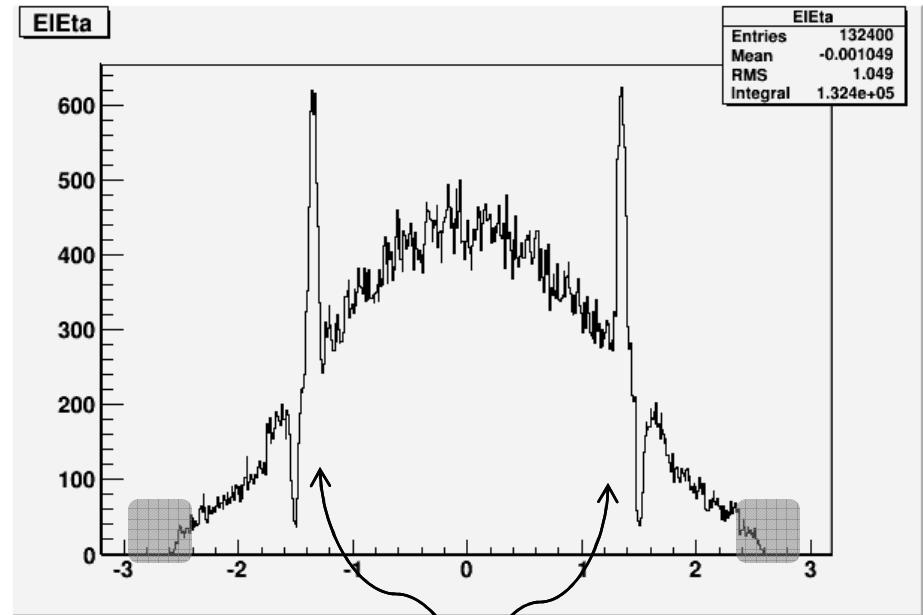
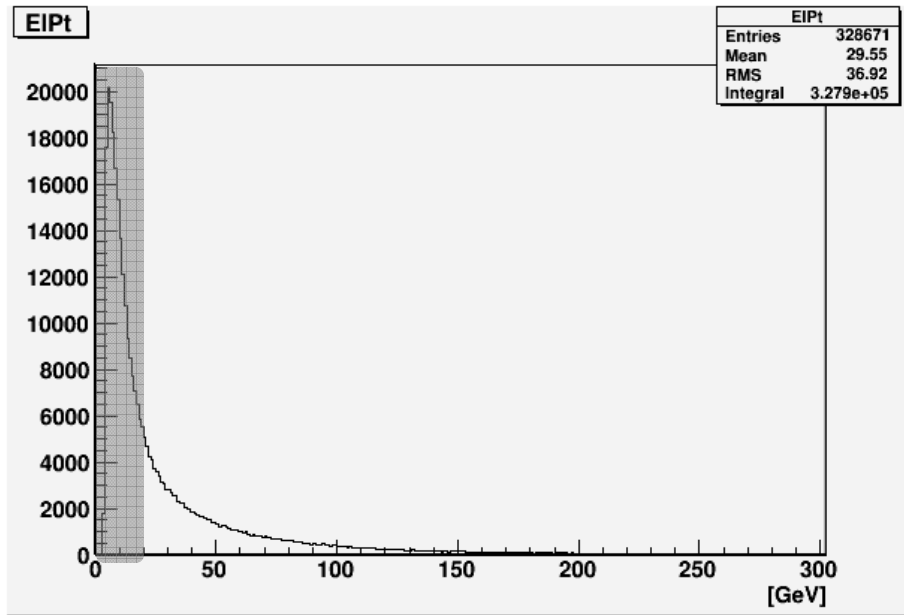
$d0 = E.gsfTrack().get() \rightarrow d0();$

$D0 = d0 - (BS.x0() * \sin(\phi) + (BS.y0() * \cos(\phi)));$



Impact Parameter has  
no effect on the  
selection !  
Or  
It is not calculated  
Correctly

# Electron Selection



# Jet Selection

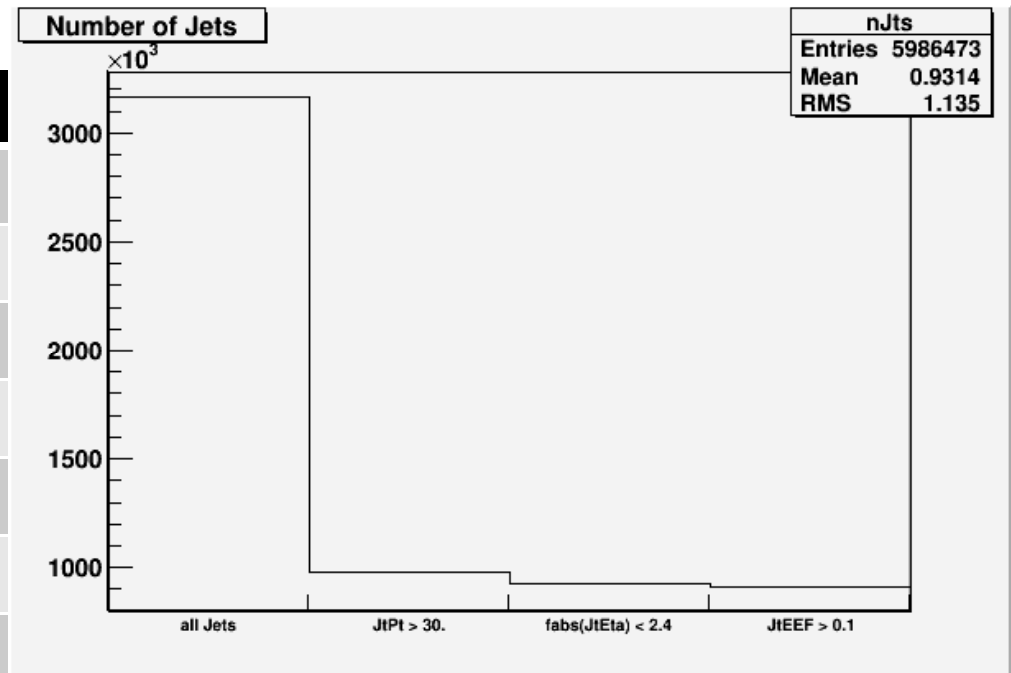
## Jet Selection

Pt > 30 GeV

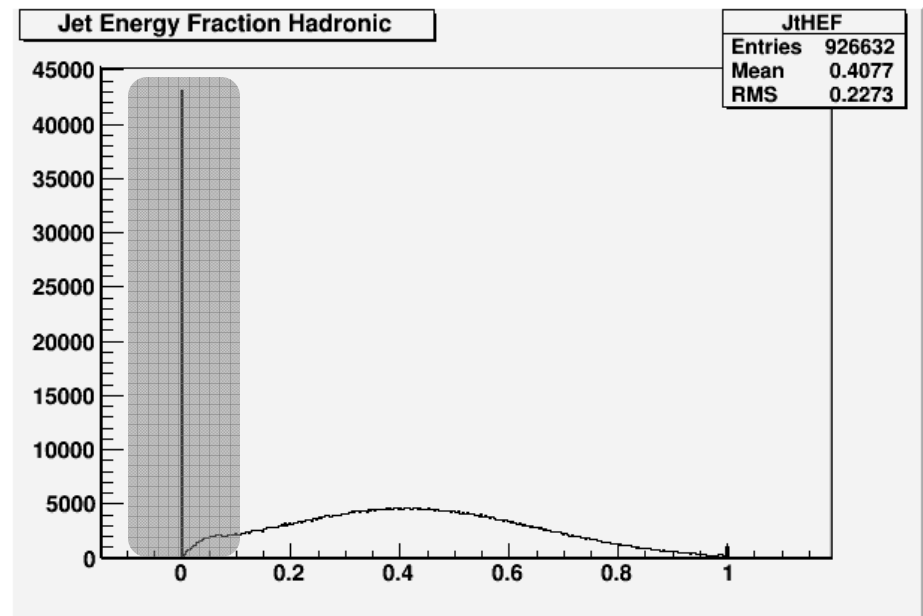
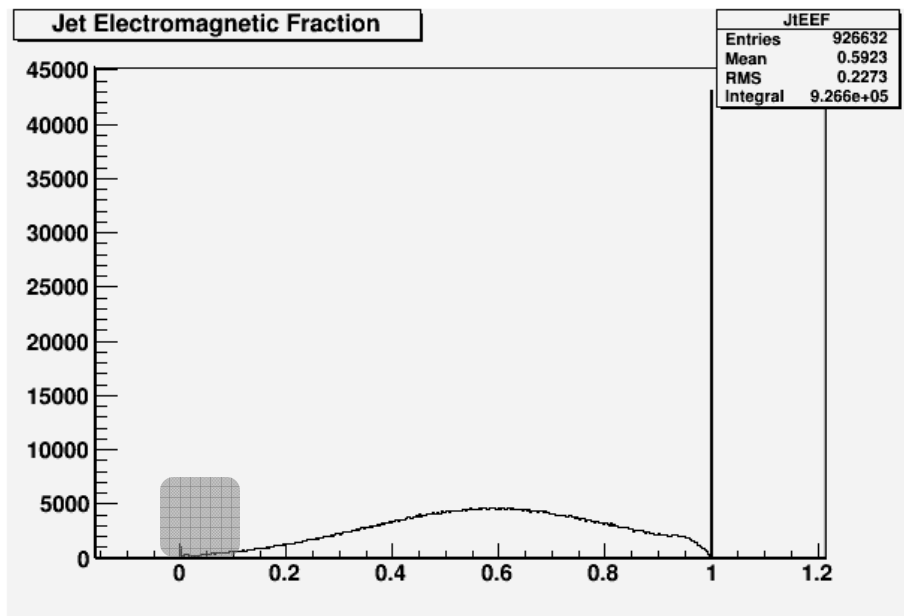
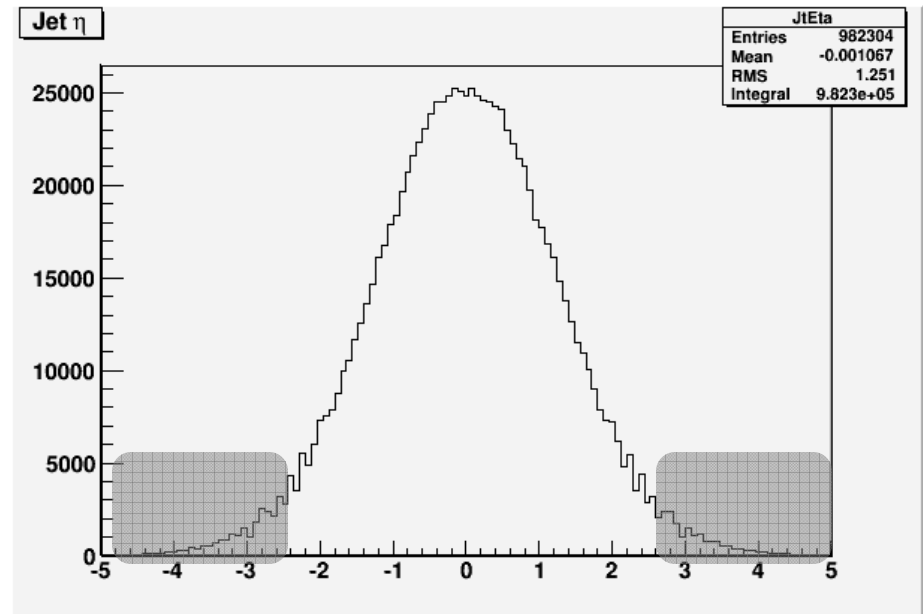
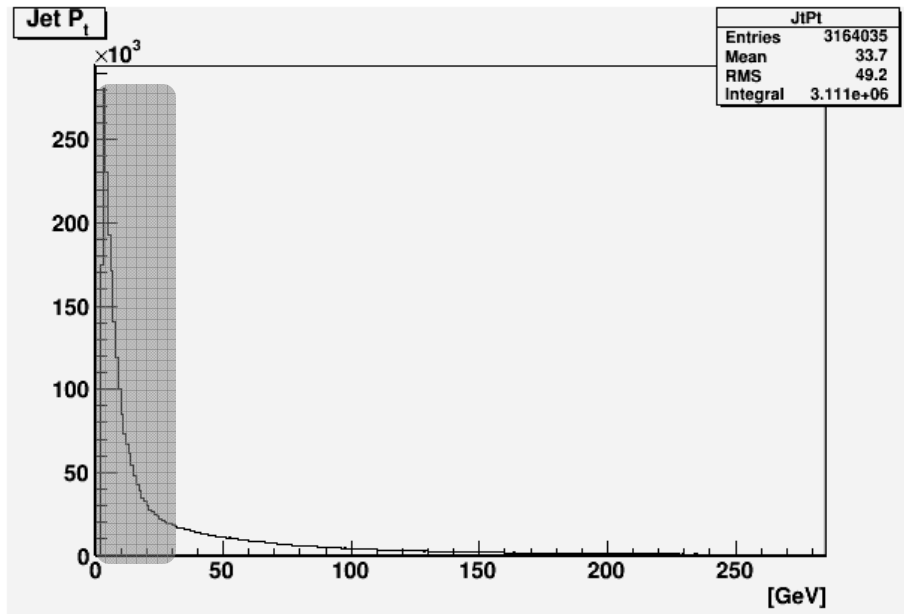
$|\eta| < 2.4$

Jet.emEnergyFraction() > 0.1 ?

Jet.energyFractionHadronic() > 0.1 ?

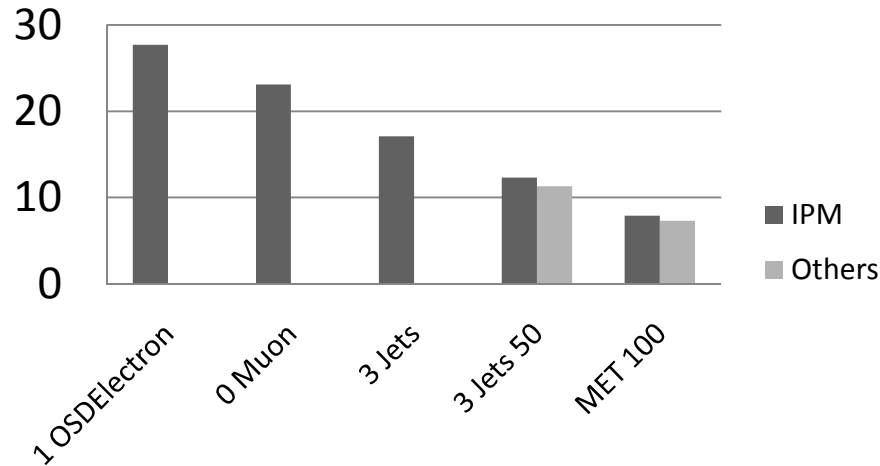


# Jet Selection



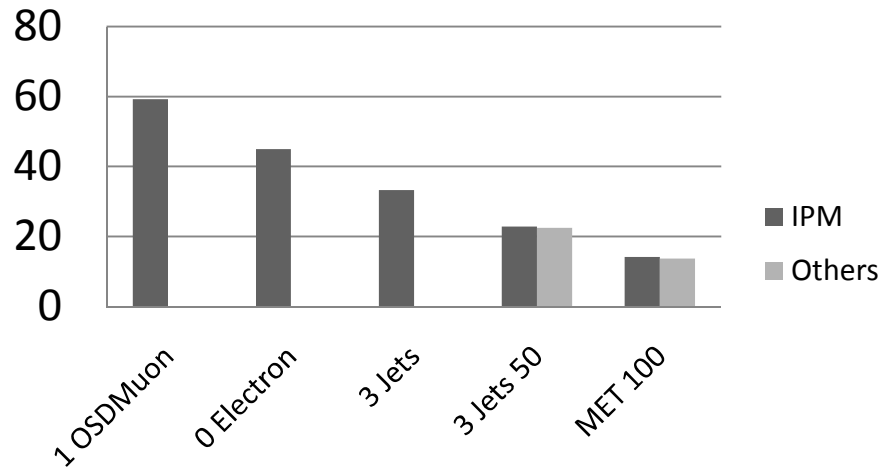
# Event Counting – Tight Condition ( Pt > 20 )

## Opposite-Sign Di-Electron

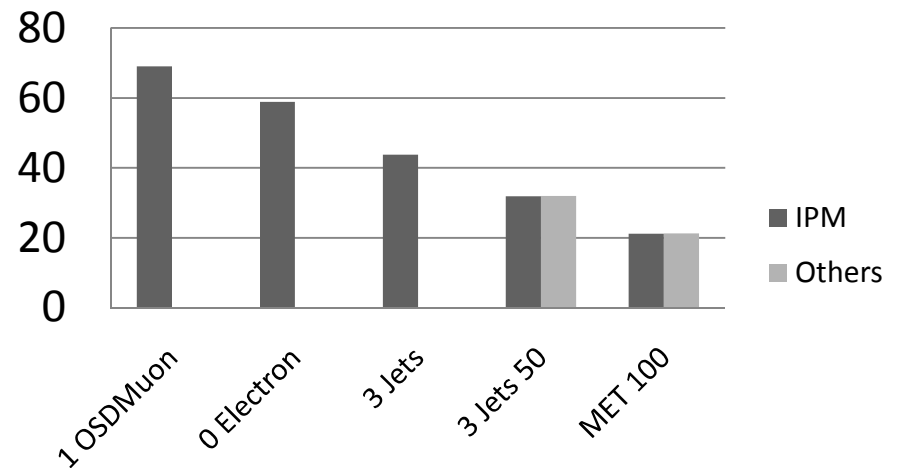


	OS-EE		OS-MM		OS-EM	
1 OS- LL	27.7		69		59.2	
0 Other L	23.1		58.9		45	
> 2 Jets	17.1		43.8		33.3	
3 Jet 50	12.3	11.3	31.9	32.0	22.8	22.5
> MET 100	7.9	7.2	21.2	21.3	14.1	13.7
	IPM	Others	IPM	Others	IPM	Others

## Opposite-Sign ElectroMuon



## Opposite-Sign Di-Muon



# Event Counting – Loose Condition ( Pt > 10 )

	OS-EE				OS-MM				OS-EM			
1 OS- LL	32.8				111.3				82.4			
0 Other L	27.5	26.5	26.5	26.5	95.6	93.8	94.2	93.8	63.3	61.6	61.1	61.6
> 2 Jets	20.0				69				46.8			
3 Jet 50	14.2	14.2	14.2	14.0	51.6	51.0	51.5	51.4	32.3	33.4	32.6	32.7
> MET 100	9.2	6.6	6.4	6.3	34.4	33.9	33.5	33.5	19.8	17.3	16.6	16.6
	IPM	Achen	Athens	Imperial	IPM	Others	Athens	Imperial	IPM	Others	Athens	Imperial