

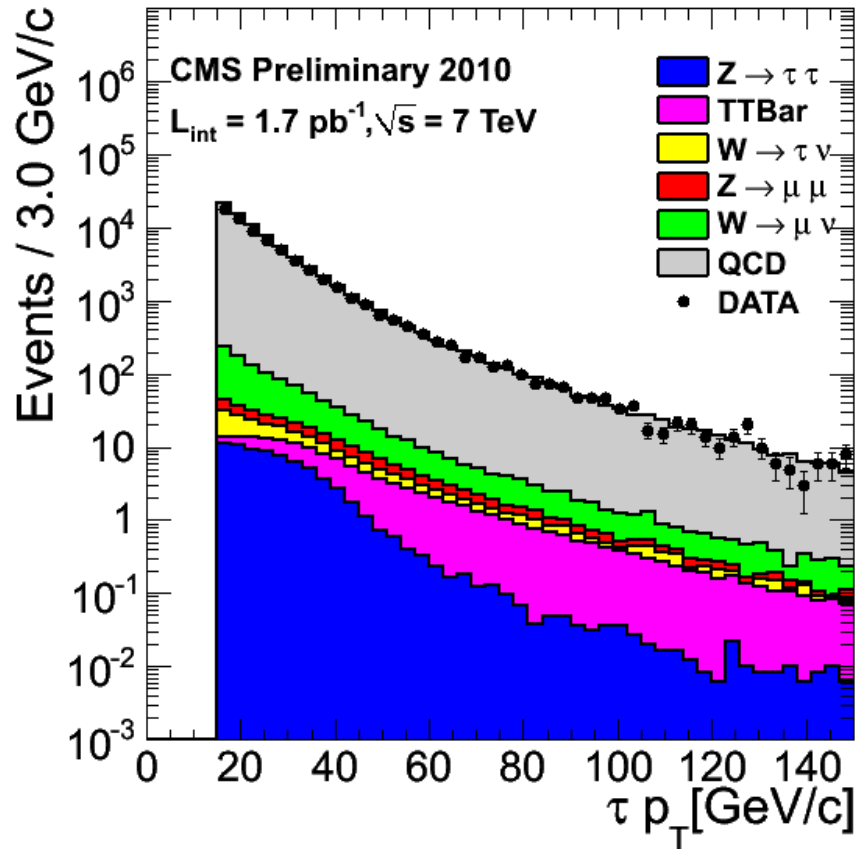
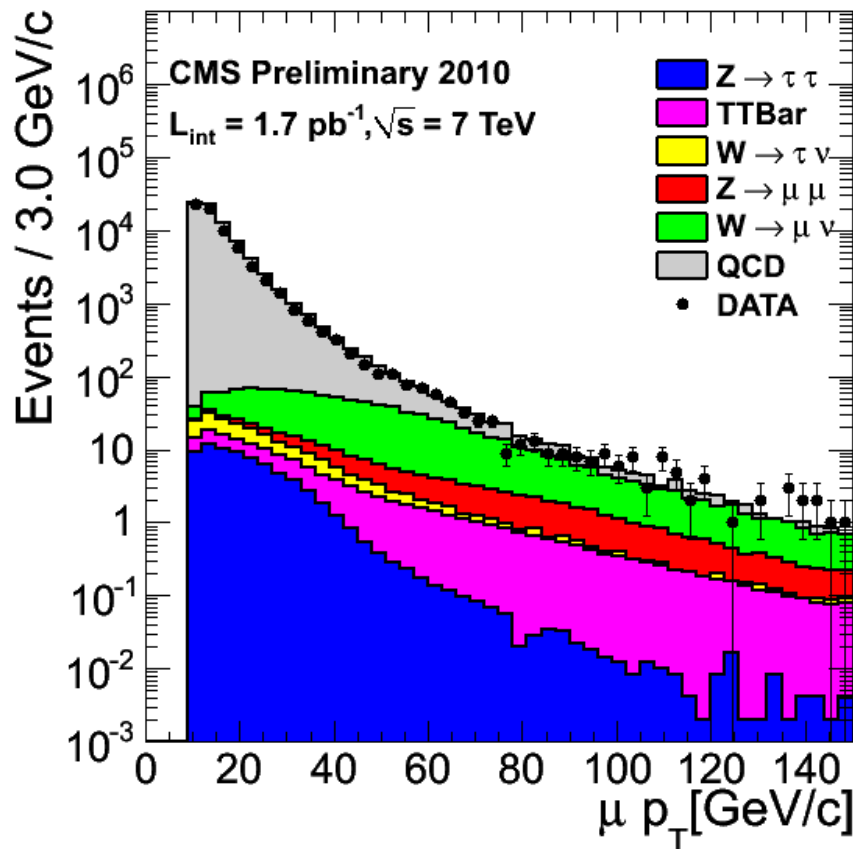


CMS EWK Tau Approved plots

September 3, 2010

Muon and Tau Pt Control Plots

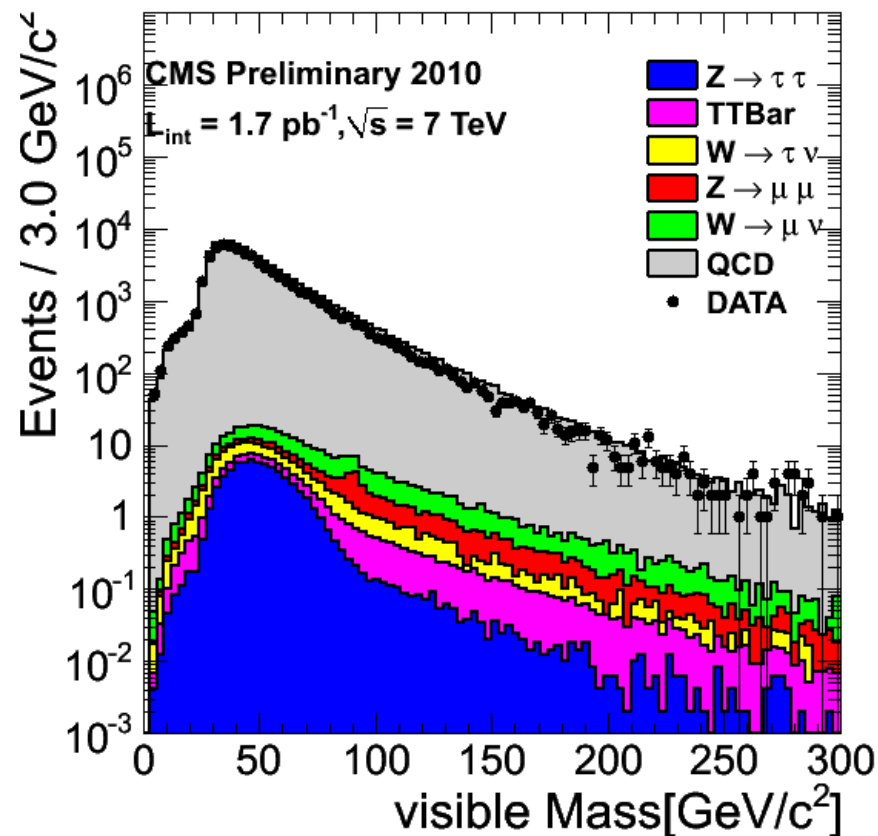
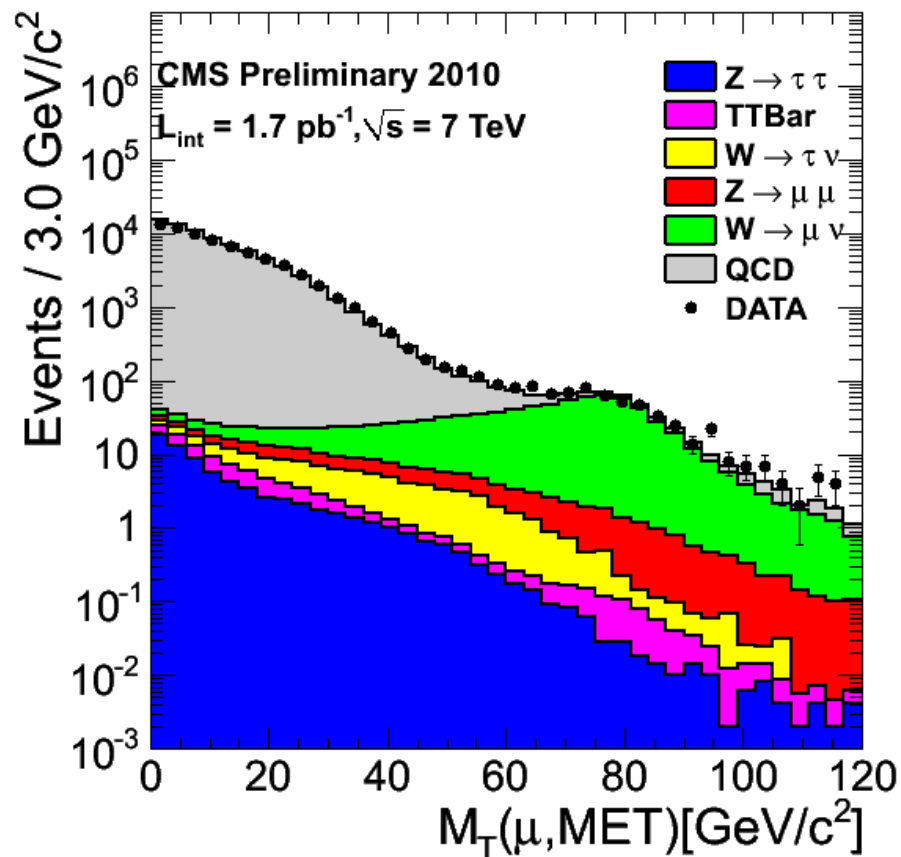
Selections as in ICHEP PFT-10-004 PAS



Muon $P_t > 10 \text{ GeV/c}$, Tau(π, ρ, a^1) $P_t > 15 \text{ GeV/c}$ - No Isolation applied

$M_T(\mu, MET)$ and visible mass

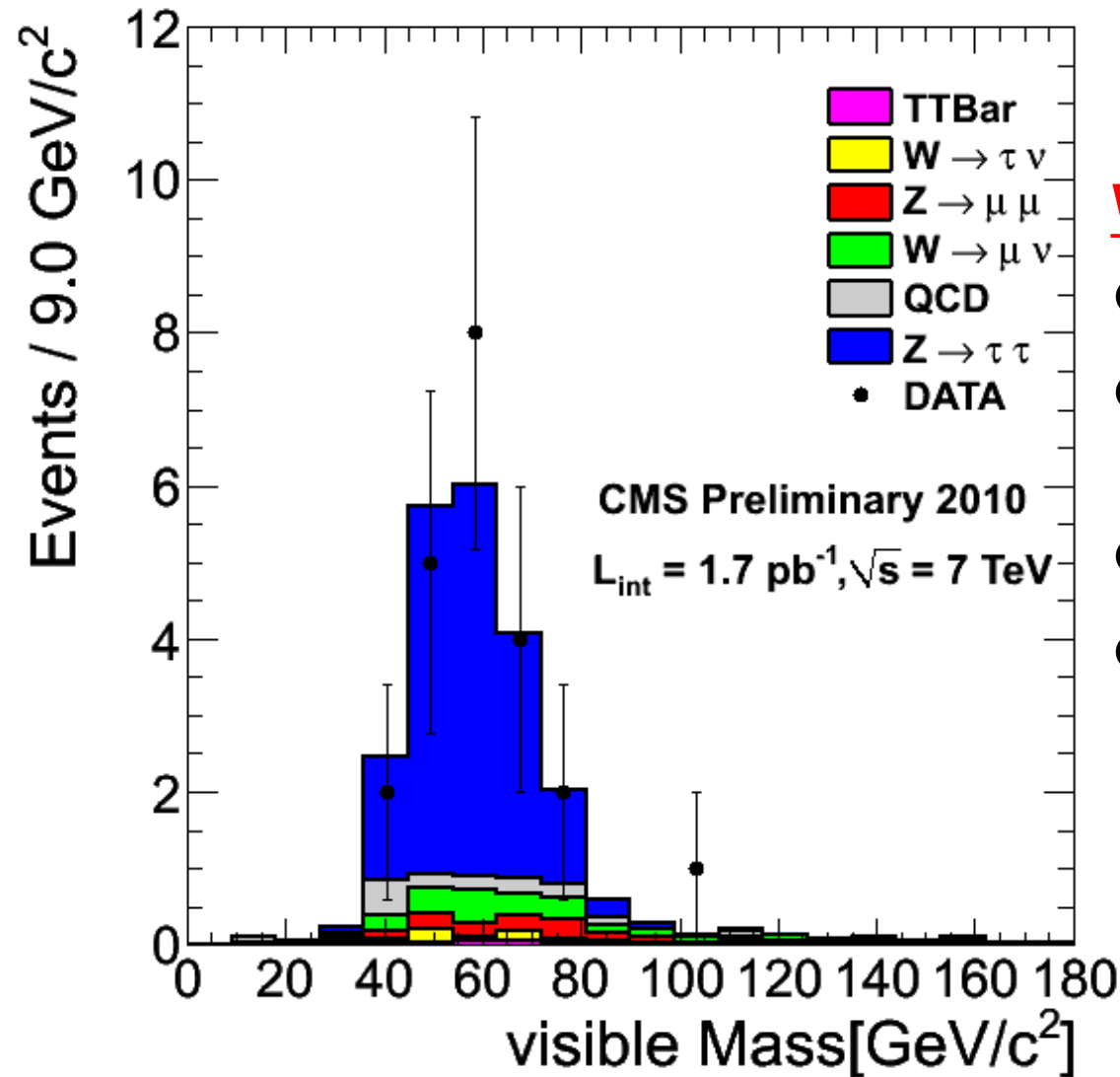
Selections as in ICHEP PFT-10-004 PAS



Muon $P_t > 10 \text{ GeV}/c$, Tau(π, ρ, a^1) $P_t > 15 \text{ GeV}/c$ - No Isolation applied

Visible Mass (WP 75%)

Selections as in ICHEP PFT-10-004 PAS



WP 75

- **Mu Pt > 15 GeV/c**
- **Rel Comb PF Iso < 0.1**
- **Tau Pt > 20 GeV/c**
- **HPS Loose Isolation**

QCD Background estimation: OS/SS

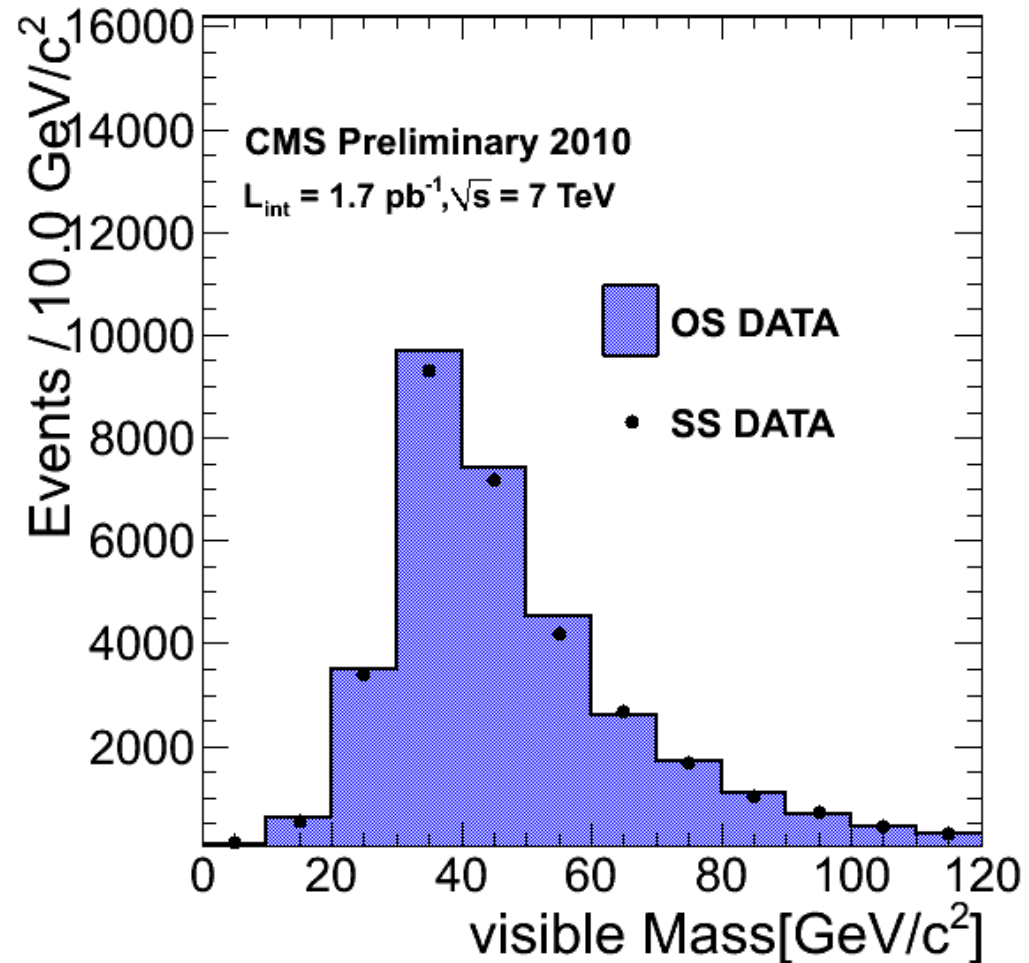
Selections as in ICHEP PFT-10-004 PAS

Measured:

**OS/SS = 1.03 ±
0.01(stat)**

**QCD MC expected
value:**

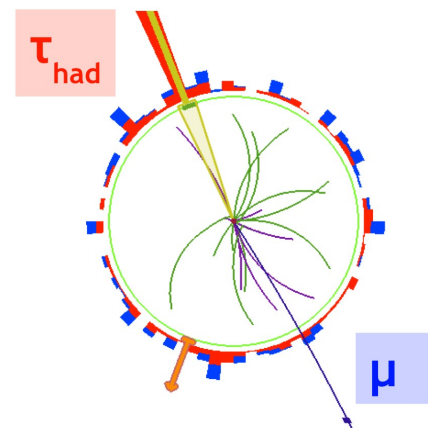
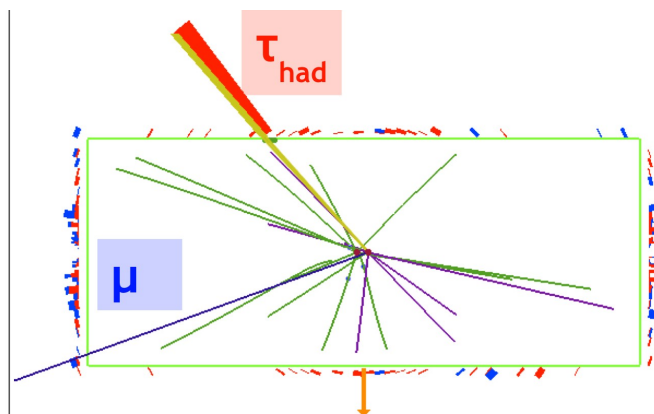
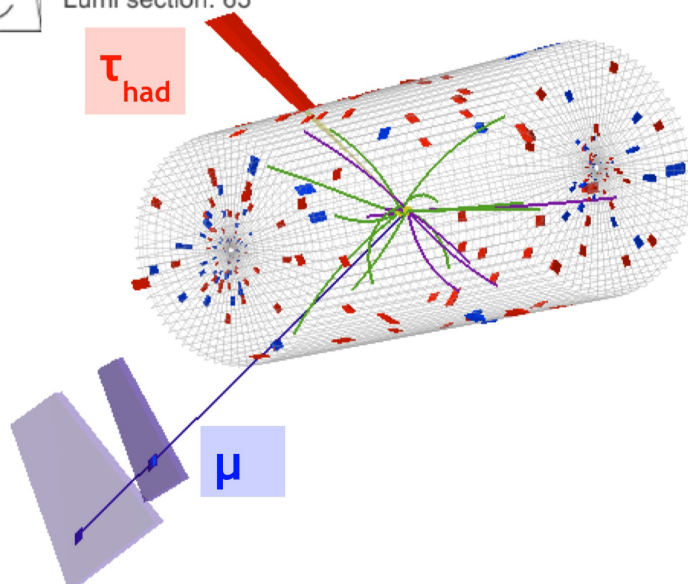
**OS/LS = 1.036
±0.002**



$Z \rightarrow \text{tau tau} \rightarrow \text{mu} + \text{tau}_{\text{had}}$ (one prong+pi0 tau)



CMS Experiment at LHC, CERN
Data recorded: Tue Jun 29 13:34:19 2010 CEST
Run/Event: 138921 / 17818013
Lumi section: 65

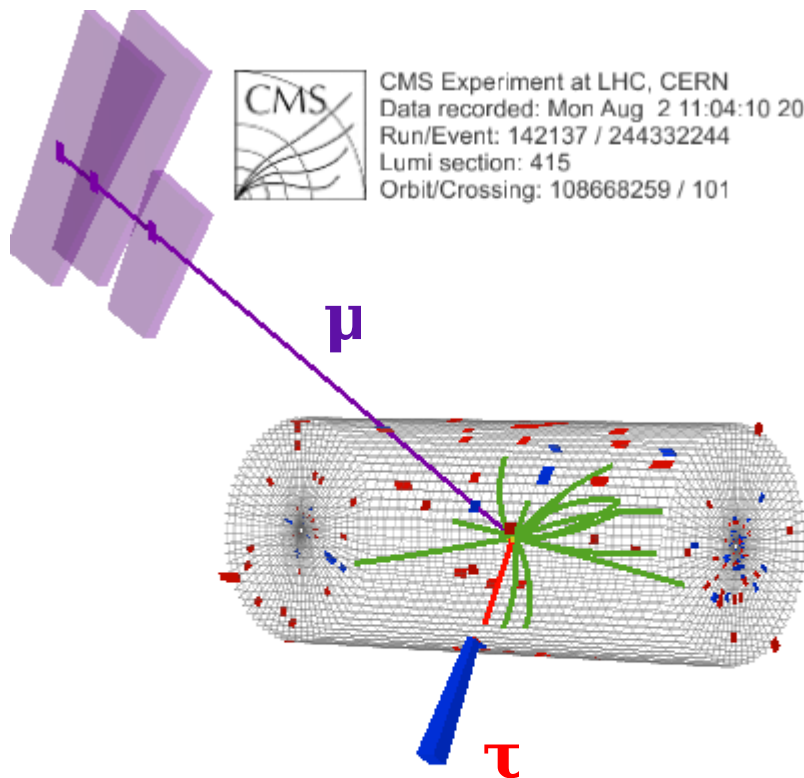


$$\mu p_T = 22.8 \text{ GeV}/c$$

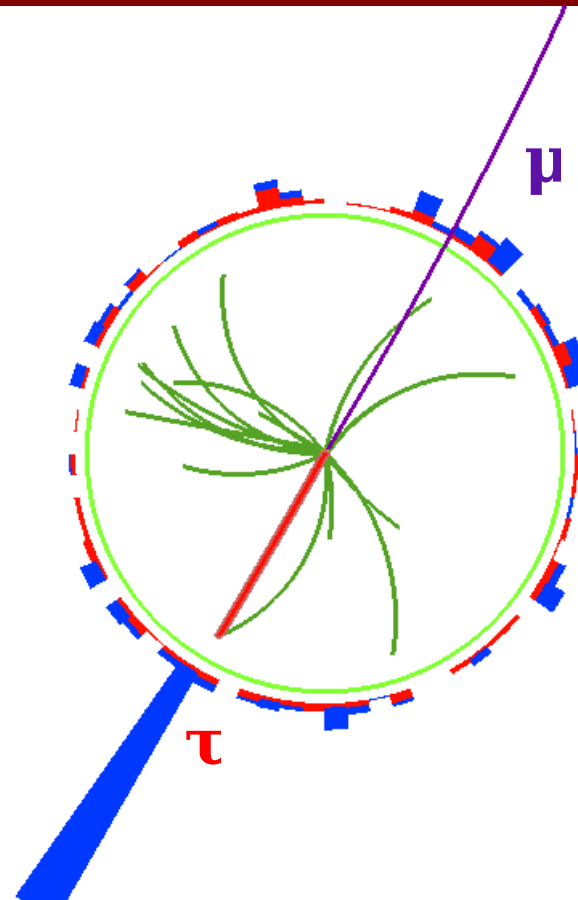
$$T_{\text{had}} E_T = 32.9 \text{ GeV}$$

$$\text{Vis. Mass} = 60.8 \text{ GeV}/c^2$$
$$M_T(\mu, \text{MET}) = 10.1 \text{ GeV}$$

$Z \rightarrow \text{tau tau} \rightarrow \text{mu} + \text{tau}_{\text{had}}$ (one prong tau)



CMS Experiment at LHC, CERN
Data recorded: Mon Aug 2 11:04:10 2010 CEST
Run/Event: 142137 / 244332244
Lumi section: 415
Orbit/Crossing: 108668259 / 101

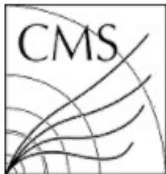


μ Pt = 23.1 GeV/c
 $\eta = -1.31$

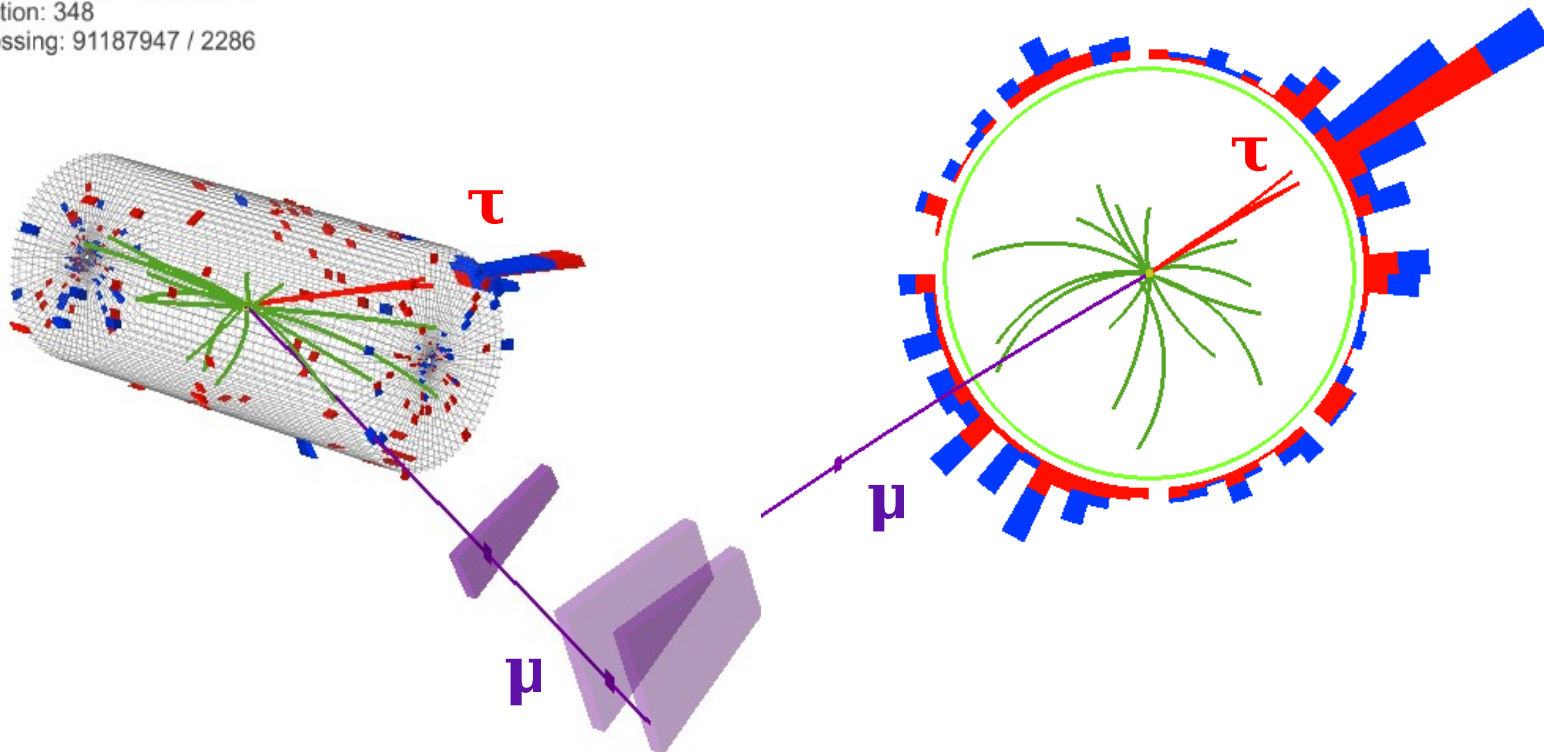
τ Pt = 36.8 GeV/c
 $\eta = 0.03$

Vis. Mass = 73 GeV/c²
 $M_{\tau}(\mu, \text{MET}) = 3.3 \text{ GeV}$

$Z \rightarrow \tau \tau \rightarrow \mu + \tau_{\text{had}}$ (three prong tau)



CMS Experiment at LHC, CERN
Data recorded: Sun Aug 15 03:57:48 2010 CEST
Run/Event: 142971 / 323188785
Lumi section: 348
Orbit/Crossing: 91187947 / 2286



μ Pt = 32.4 GeV/c
 $\eta = 1.7$

τ Pt = 37.4 GeV/c
 $\eta = 1.5$
Mass = 1.2 GeV/c²

Vis. Mass = 70 GeV/c²
 $M_{\tau}(\mu, \text{MET}) = 4.1$ GeV