Weekly

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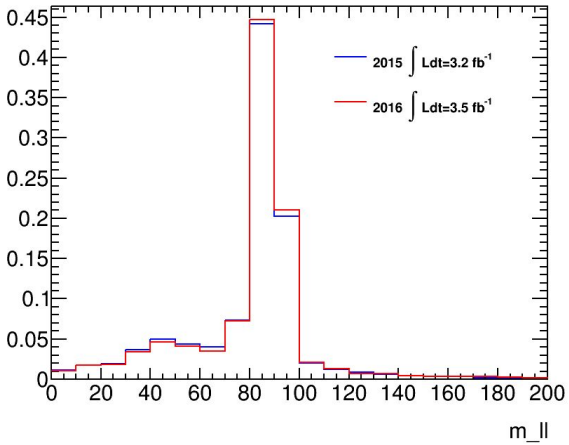
Introduction

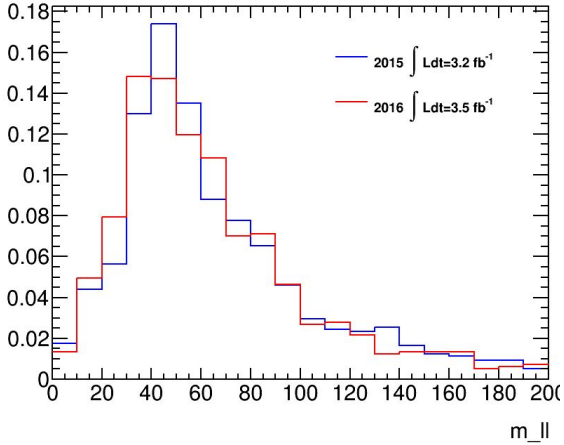
- **v15 ready, 3.2 + 3.5 fb^{-1} ;**
  - MC weights: lepTrigtight not used, some problem;
  - begin using objects after ASG OLR, before OLR was done privately;
- **data15 vs data16;**

Distributions-I

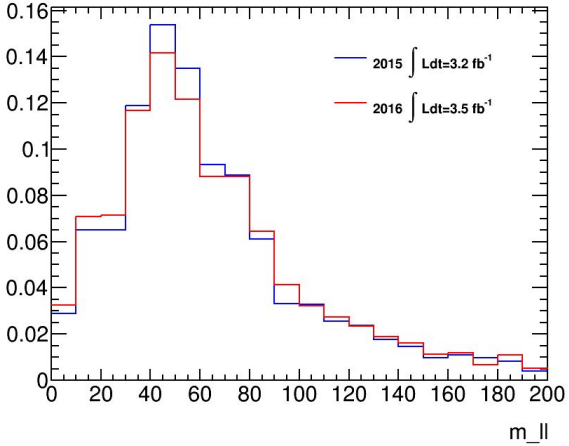
ee



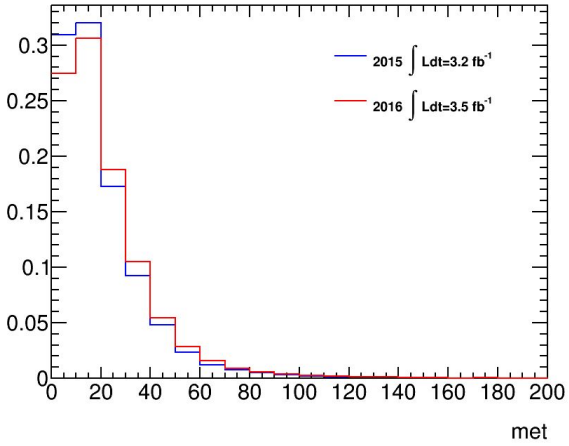
mumu

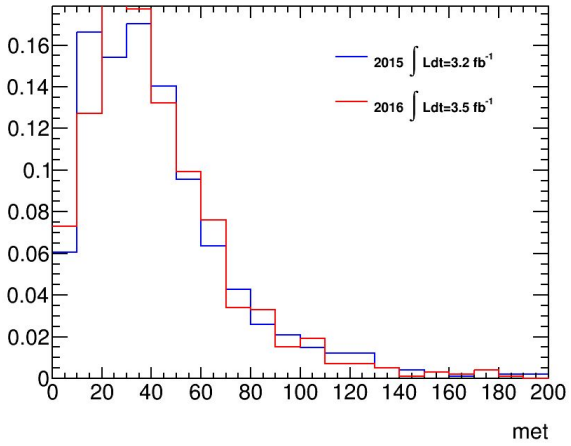


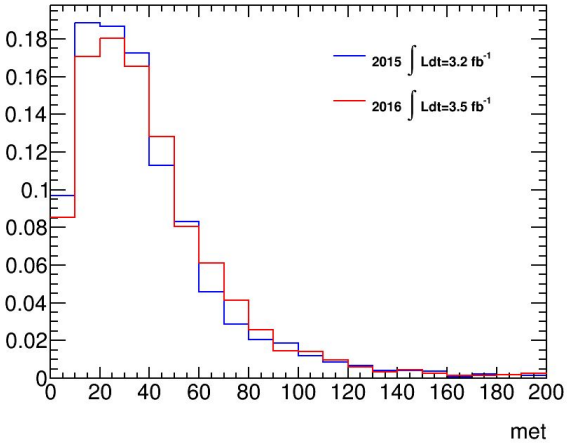
emu



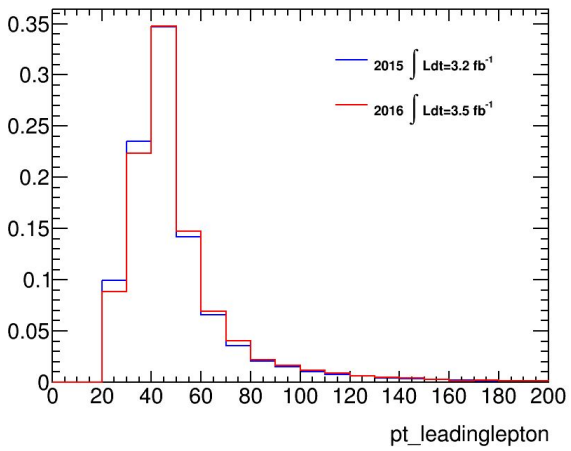
2 SS tight leptons, pt_l1>25 GeV

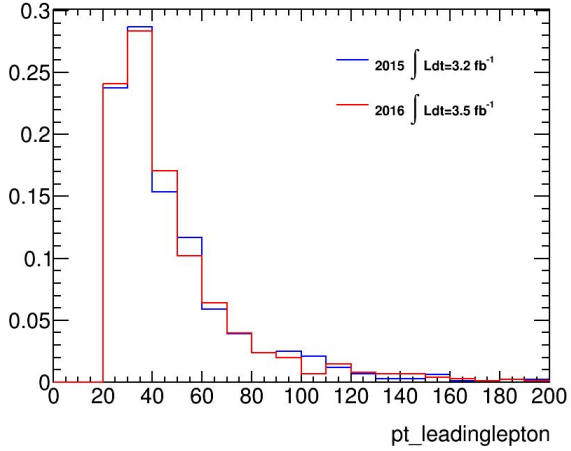


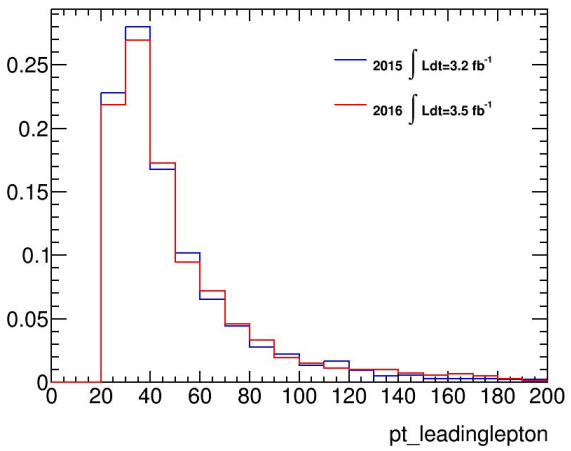


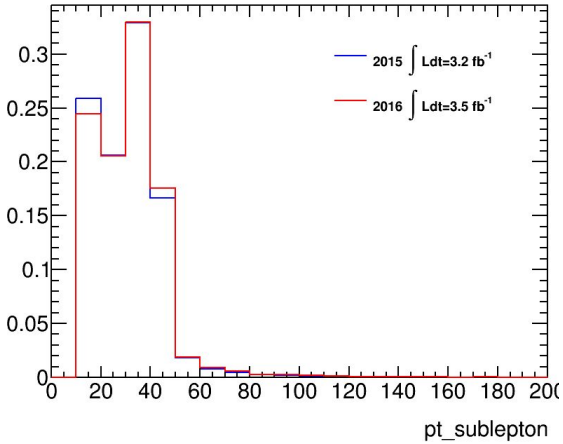


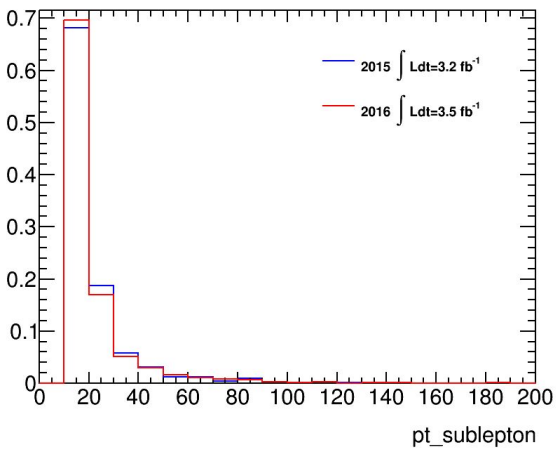
Distributions-II

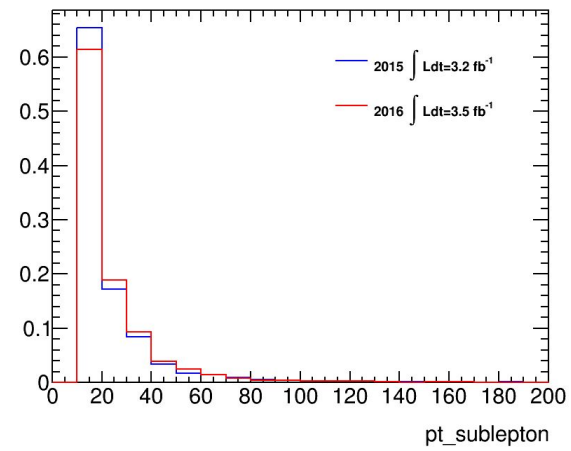












result with data15

- **Z veto:**
  - id+antiid: Njet<3;
  - id + id: Njet<3;
  - id + antiid: Njet==3;
- **ff_ele=0.69, ff_mu=0.31;**

	ee	mumu	emu
data	359	99	207
QmisID	59.8	~	8.3
prompt SS	16.1	15.6	31.7
jet fakes	209.3	100.9	197.4
(data-bkg)/bkg	25.9%	+15.0%	12.9%

result with data16

- **ff_ele=0.78, ff_mu=0.30;**

	ee	mumu	emu
data	376	89	231
QmisID	59.3	~	8.8
prompt SS	17.6	17.0	34.8
jet fakes	214.4	89.8	216.7
(data-bkg)/bkg	29.1%	+16.7%	+11.2%

Back up

jet fakes updated again..

- **For emu channel, id+antiid can have jet fakes, first need subtract them;** $N^{e\mu}_{\text{jet fakes}} = (==3\,jets)(e\not\mu\mu - \not e\not\mu\mu \times f_e - QmisID - promtSS) \times f_\mu + (==3\,jets)(\not e\mu\mu - \not e\not\mu\mu \times f_\mu - QmisID - promtSS) \times f_e$

	ee	mumu	emu
data	150	66	78
QmisID	15.8	~	19.1
prompt SS	10.1	12.4	20.1
jet fakes	117.5	47.0	56.1
(data-bkg)/bkg	6.0%	11.1%	-18.2%

	ee	mumu	emu
data	150	66	78
QmisID	15.8	~	0.03
prompt SS	10.1	12.4	20.1
jet fakes	117.5	47.0	56.1
(data-bkg)/bkg	6.0%	11.1%	-2.3%

Fake backgrounds

- **CERN-OPEN-2008-020**
  - QmisID: f(ele) = $1e^{-3}$; f(mu)=$1e^{-5}$
  - light jet fake rate: f(ele)=$6.7e^{-5}$; f(mu)=$1.7e^{-5}$;
  - b jet fake rate: f(ele/mu)=$5e^{-3}$
- **Details:**
  - To be comparable with prompt SS bkg, fake rates are applied after selecting corresponding final states of bkg process; Eg: ttbar_semilep, 10k were generated, after object defintions and overlap removal, selected 2k events with one lepton and >=4 jets(including b jets). So xsec(fake_ttbar_semilep)=xsec(ttbar)*(2k/10k)*fake rate
  - xsec(fake_W+5jets)=xsec(W+4jet)*(xsec(W+4jet)/xsec(W+3jet))

TeVatron $\sqrt{s} = 1.96$ TeV	$\sigma^{\rm NLO}_{t\bar{t}j}/\sigma^{\rm NLO}_{t\bar{t}}$	LHC $\sqrt{s} = 14$ TeV	$\sigma^{\rm NLO}_{t\bar{t}j}/\sigma^{\rm NLO}_{t\bar{t}}$
$p_T \geq 20$ GeV	30%	$p_T \geq 50$ GeV	47%
$p_T \geq 40$ GeV	11%	$p_T \geq 100$ GeV	22%

TeVatron $\sqrt{s} = 1.96$ TeV	$\sigma^{\rm NLO}_{t\bar{t}jj}/\sigma^{\rm NLO}_{t\bar{t}}$	LHC $\sqrt{s} = 7$ TeV	$\sigma^{\rm NLO}_{t\bar{t}jj}/\sigma^{\rm NLO}_{t\bar{t}}$
$p_T \geq 20$ GeV	4%	$p_T \geq 50$ GeV	6%
$p_T \geq 40$ GeV	1%	$p_T \geq 100$ GeV	1%

H300

- Lumi=300 fb^{-1}

processes	xsec(fb)	basic cuts + event selection	b-veto	pt_l1 > 25GeV met>20	m_ljjljj < 350GeV
Hhh300	11.4	1.40	1.23	0.86	0.50
ttW	50.5	8.2	1.0	0.92	0.05
WW4j	19.6	2.74	2.43	2.28	0.015
tth	12.6	2.00	0.28	0.25	0.02
Whjj	3.9	0.28	0.24	0.21	0.02
WZ4j	155	14.1	12.6	10.2	0.11
Fake	Z + 4 jet	3.48			
	W + 5 jet	22.3			
	ttbar - semilep	724.7			
	ttbar-fullep	0.23			
S/sqrt(B)	~	0.87			
Z_0	~	1.0			