A. Nikitenko CERN EP / ITEP Moscow

TAU update

results from b/tau workshop 6-8 in CERN

MET update (CMS IN in preparation)

if MET resolution improved with corrections ?

more on h->2tau

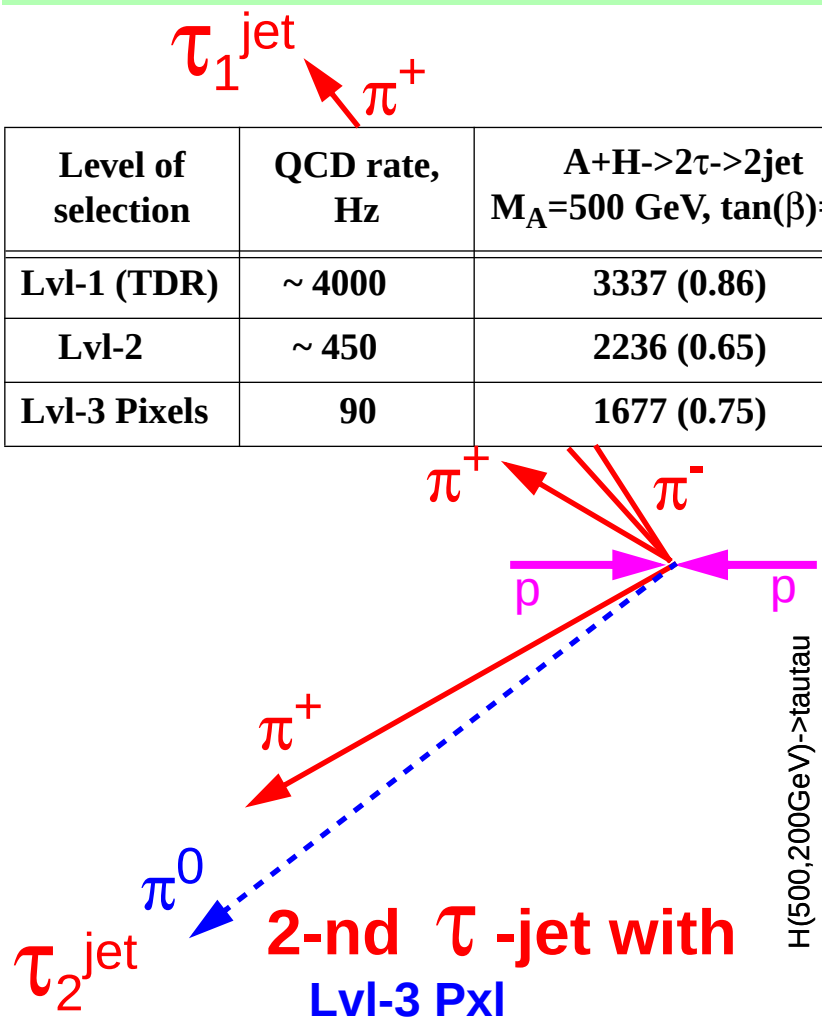
muon contribution to qcd MET

hcal meeting 13-15 June. CERN

Steps of A/H->2τ->2jet selections at HLT. L=$10^{34}cm^{-2}s^{-1}$

cms note 2000/055 on Lvl-1, Lvl-2 Tau
cms note 2001/017 on Lvl-3 Pxl Tau

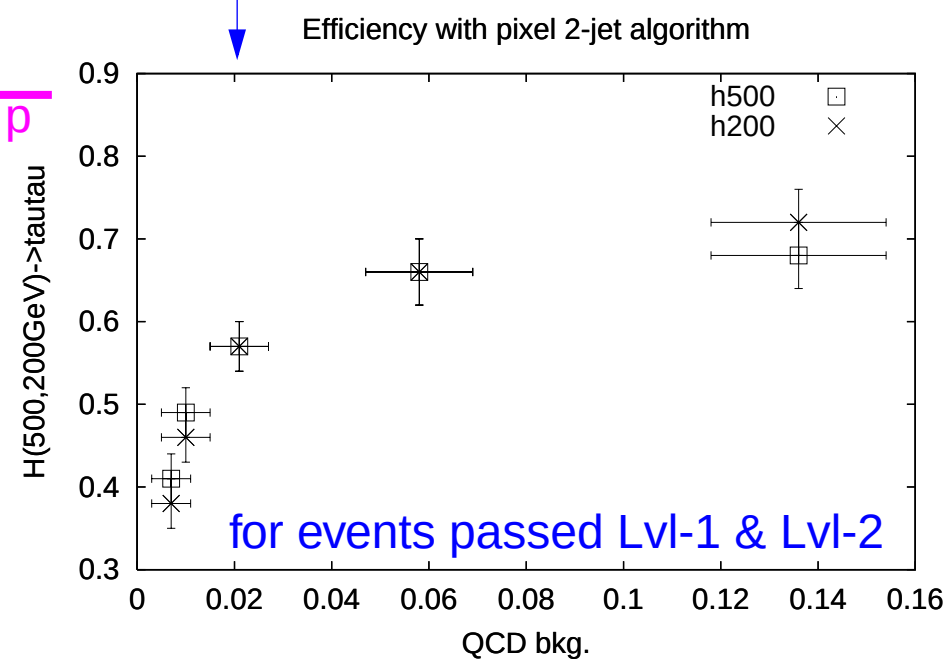
Level of selection	QCD rate, Hz	A+H->2τ->2jet M_A=500 GeV, tan(β)=25
Lvl-1 (TDR)	~ 4000	3337 (0.86)
Lvl-2	~ 450	2236 (0.65)
Lvl-3 Pixels	90	1677 (0.75)



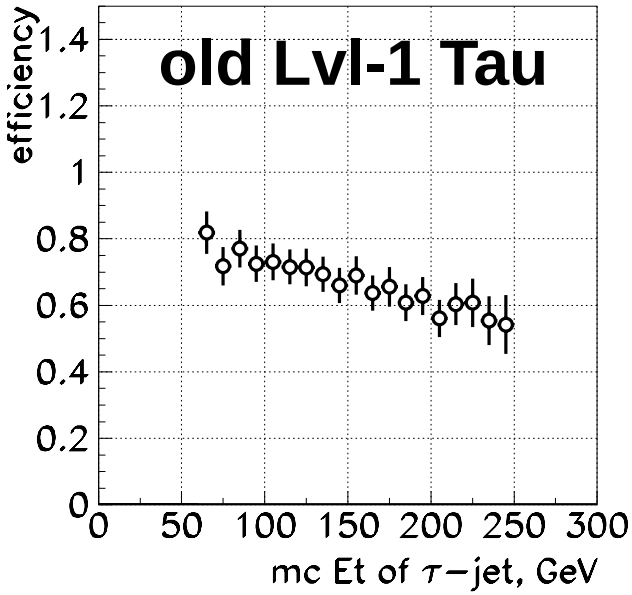
2-nd τ -jet with
Lvl-3 Pxl
or
Lvl-3 Trk (regional)

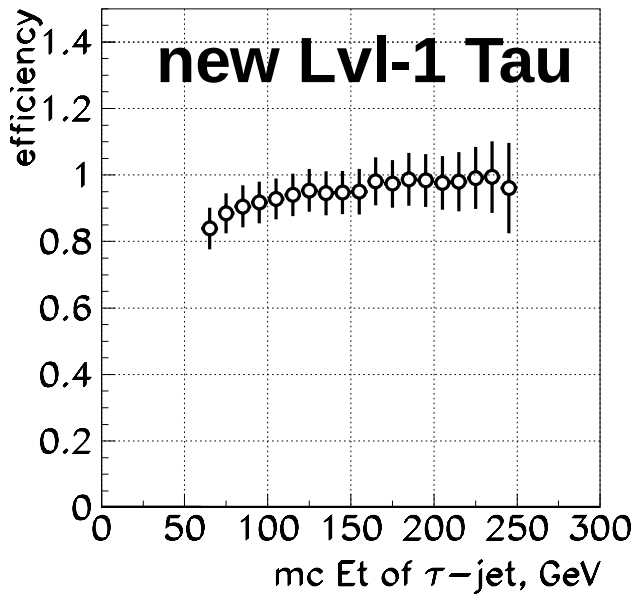
two τ -jets selection with Lvl-3 Pxl

similar results with
1-st jet with Lvl-3 Pxl
2-nd jet with Lvl-3 Trk



Update on Lvl-1 Tau (Sridhara) in orca451 and search for the 2-nd τ





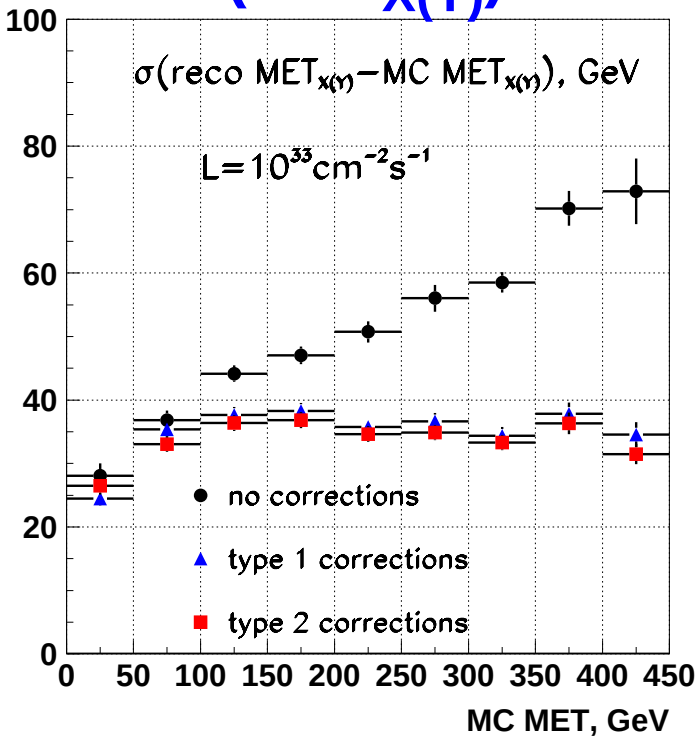
Higgs mass in bbA, A->2τ->2j	1-st L1 Tau jet in not a Tau		2-nd L1 Tau jet is not a Tau	
	old L1 Tau	new L1 Tau	old L1 Tau	new L1 Tau
200 GeV	(1.6 +- 0.05)%	(2.6 +- 0.04)%	(14.3 +- 0.2)%	(7.1 +- 0.6)%
500 GeV	(1.3 +- 0.03)%	(2.0 +- 0.02)%	(45.0 +- 0.2)%	(8.7 +- 0.4)%

2-nd Lvl-1 Tau more often a real τ with new algo, we use it at HLT

Do we improve MET resolution with corrections ?

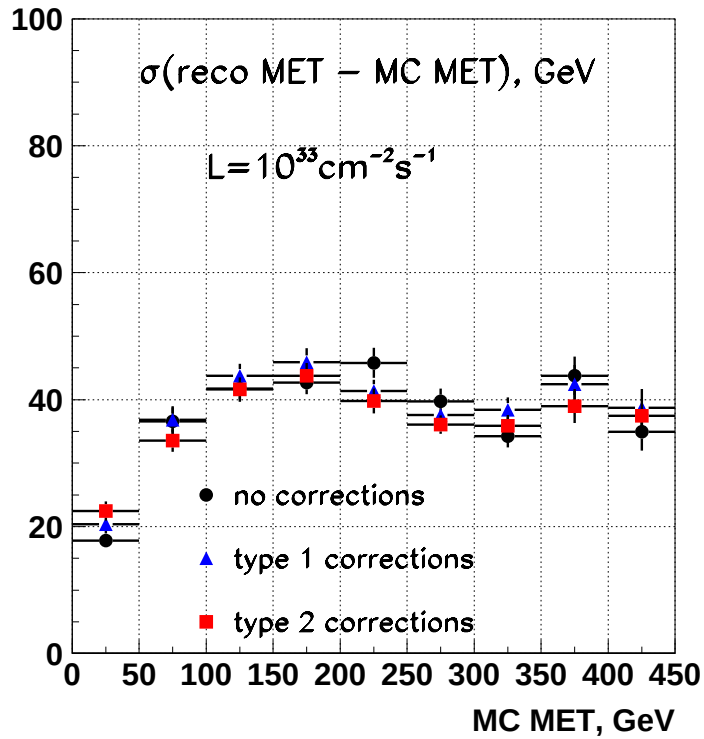
mSUGRA events

$\sigma(MET_{X(Y)})$



YES

$\sigma(MET)$

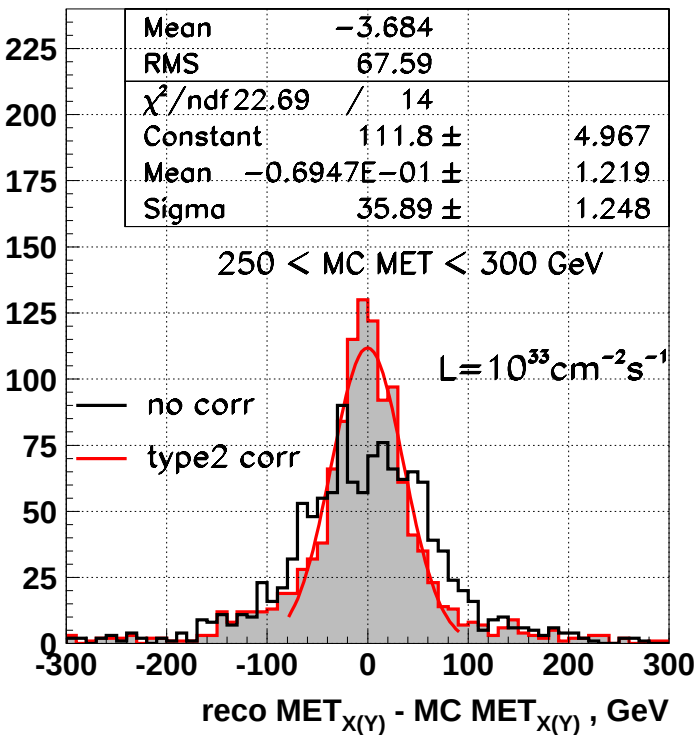


NOT

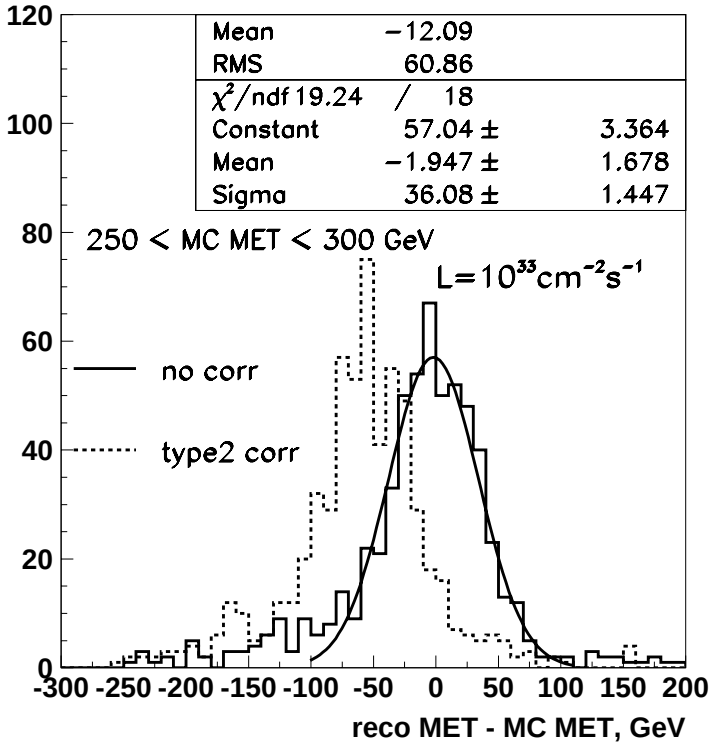
look at next slide : point MET (250-300) GeV

mSUGRA events. 250 < MC MET < 300 GeV

reco $MET_{X(Y)}$ - MC $MET_{X(Y)}$

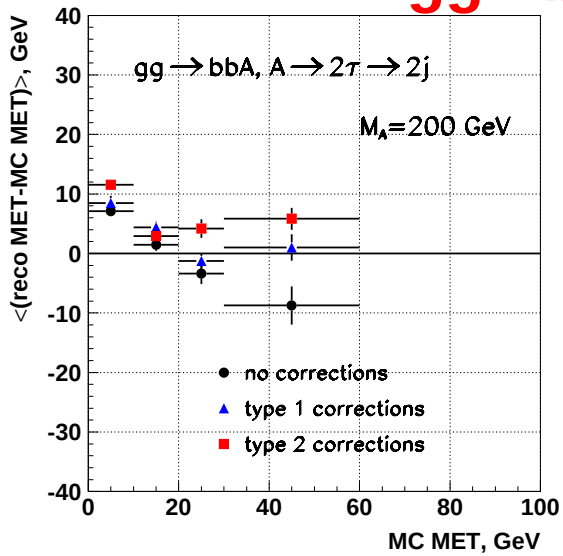


reco MET - MC MET

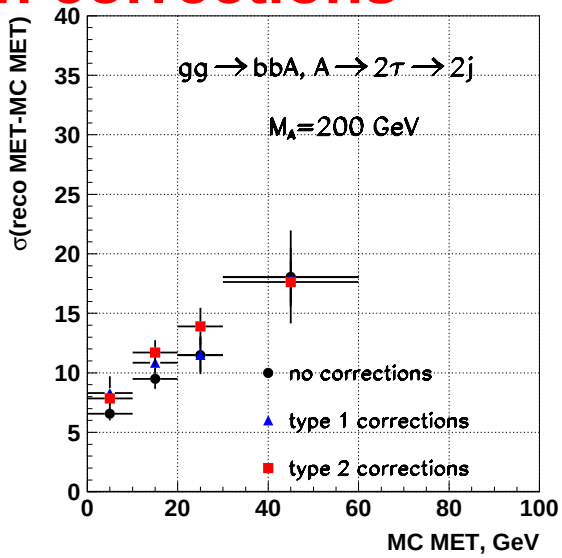


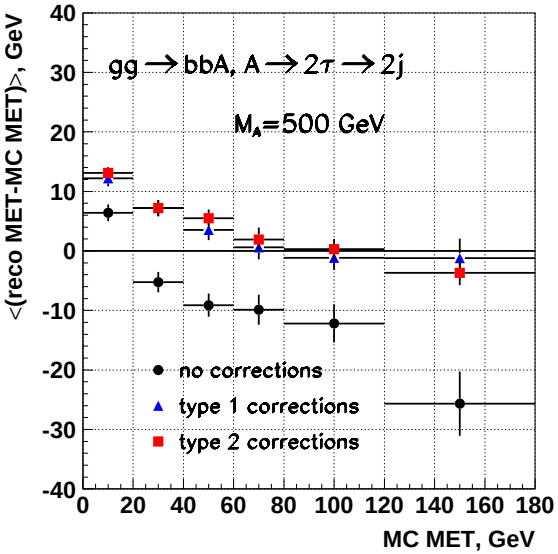
we correct MET but don't improve MET resolution

gg->bbA/H, MET with corrections

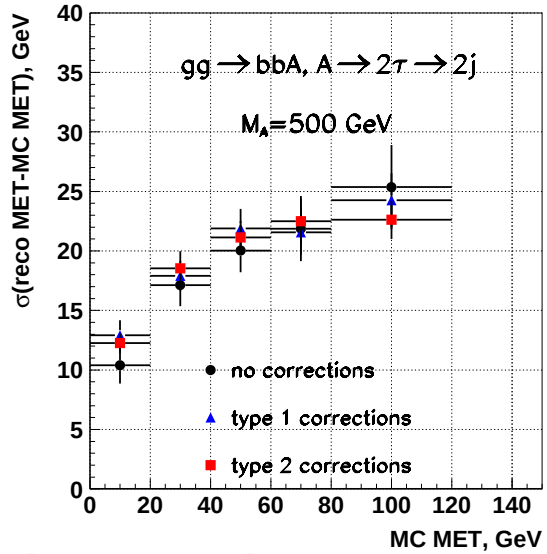


M_A = 200 GeV





M_A = 500 GeV



MET resolution is not improved

Summary on Higgs mass resolution and reco efficiency with MET corrections

Spring 2000 production data with Silvia's corrections. Tau's are not corrected

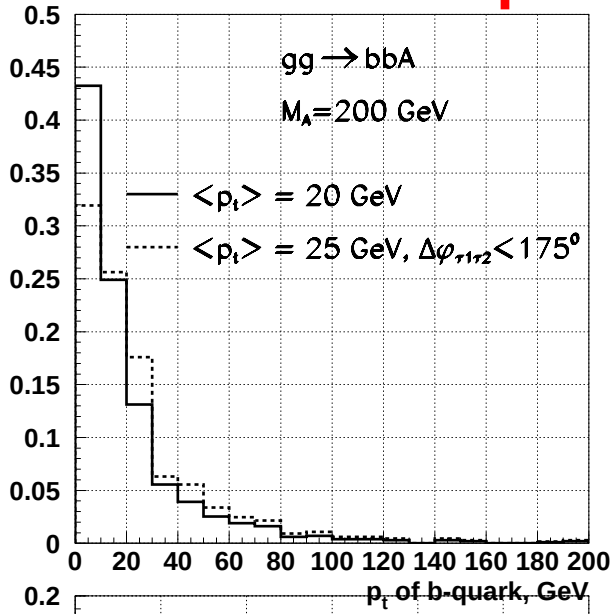
gg->bbA, A->2τ->2jets, M_A = 500 GeV, tab(β)=25						
	no corrections		type 1 corr		type2 corr	
	cone 0.5	cone 0.7	cone 0.5	cone 0.7	cone 0.5	cone 0.7
$\langle M_H \rangle$	**438.3**	**450.8**	**500.3**	**518.2**	**511.0**	**519.7**
$\sigma / \langle M_H \rangle$	**19.7**	**19.2**	**18.9**	**18.2**	**16.8**	**16.2**
ε reco	**1**	**1.0**	**1.53**	**1.58**	**1.80**	**1.76**

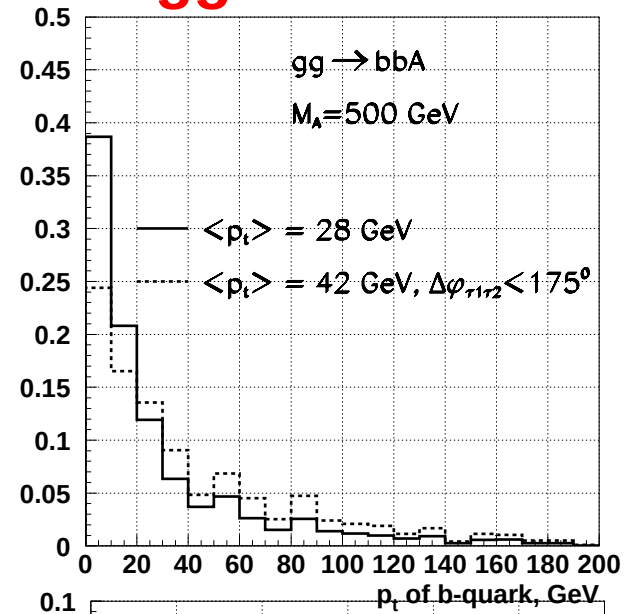
gg->bbA, A->2τ->2jets, M_A = 200 GeV, tan(β)=25						
	no corrections		type 1 corr		type2 corr	
	cone 0.5	cone 0.7	cone 0.5	cone 0.7	cone 0.5	cone 0.7
$\langle M_H \rangle$	**191.2**	**202.2**	**204.8**	**216.1**	**217.7**	**226.5**
$\sigma / \langle M_H \rangle$	**14.2**	**14.1**	**14.9**	**14.6**	**14.5**	**14.6**
ε reco	**1**	**1.0**	**1.33**	**1.42**	**1.81**	**1.80**

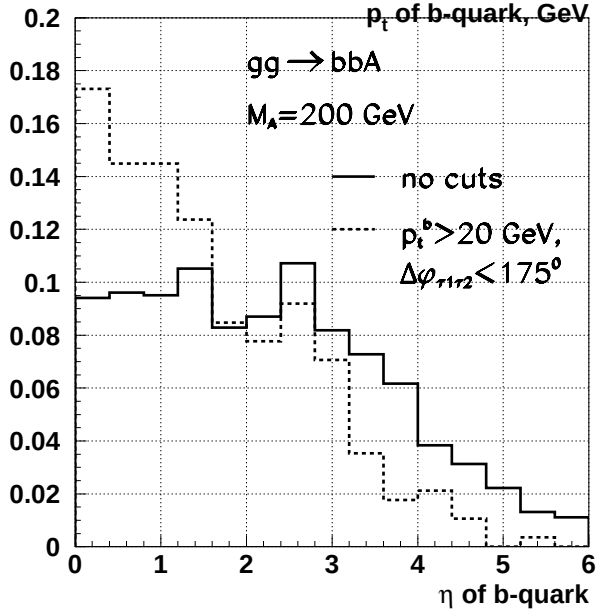
Corrections improve mass reco efficiency by factor ~ 1.8 !

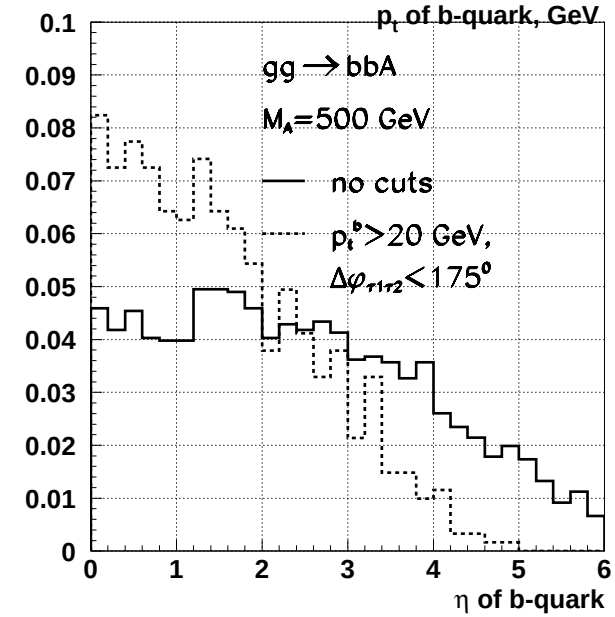
Corrections hardly (or not) improve mass resolution

b quarks kinematics in gg->bbA/H

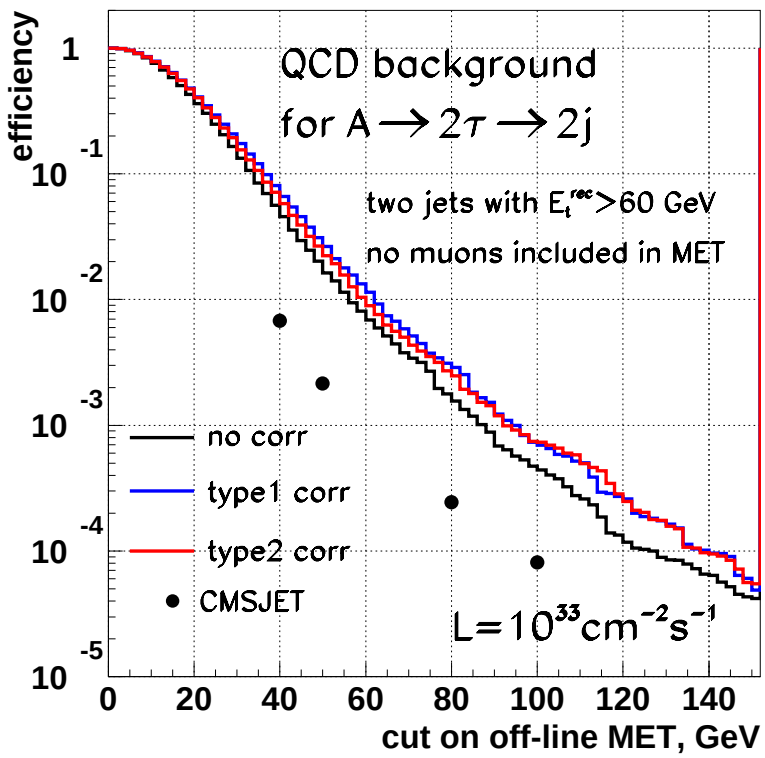


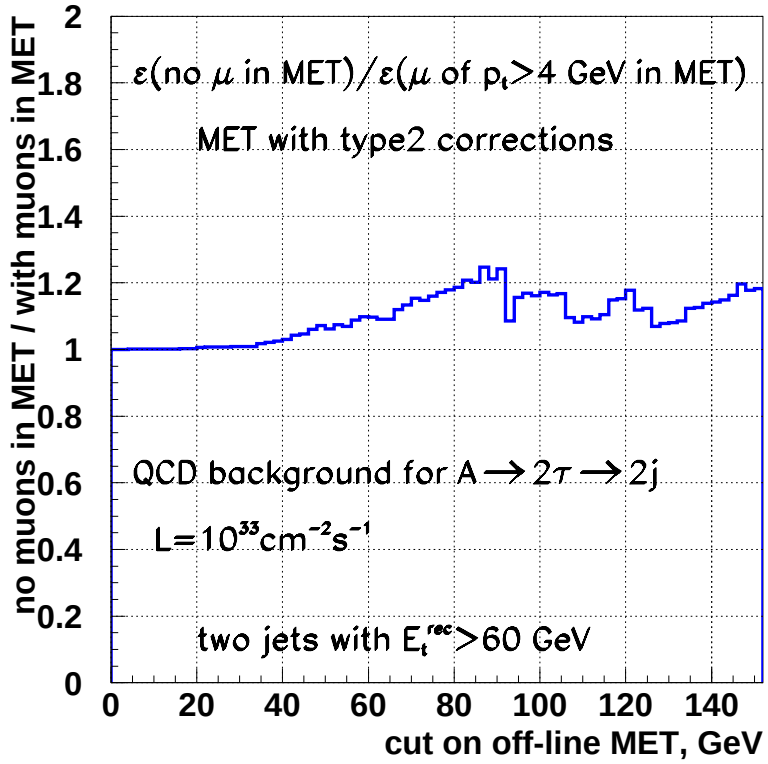
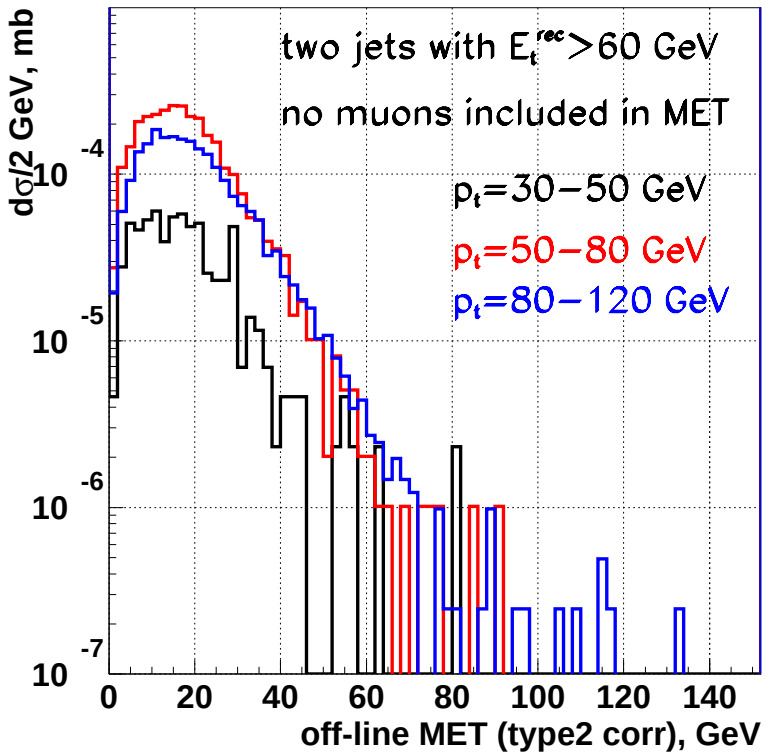
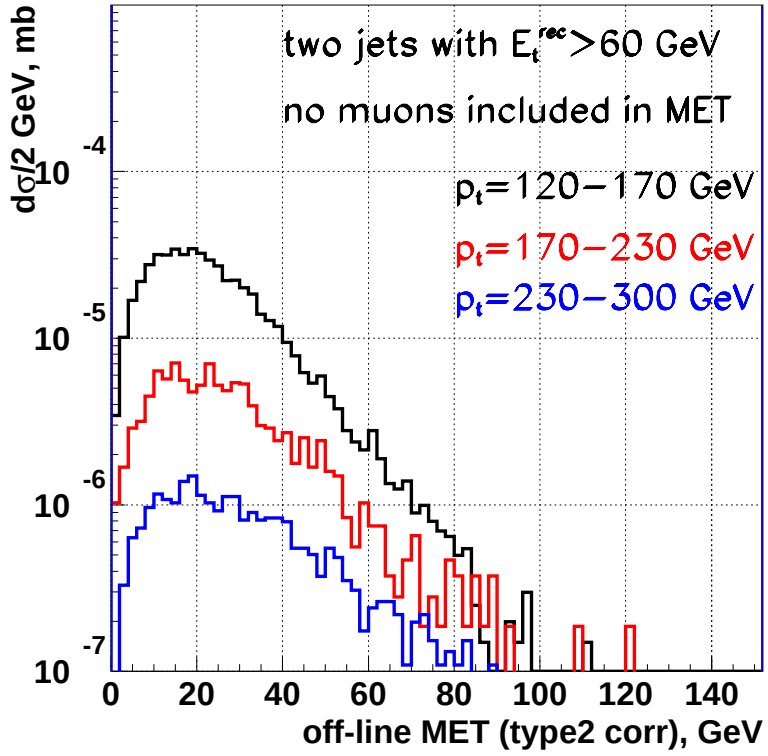






muon contribution to qcd MET





individual p_t bin contributions to qcd MET