

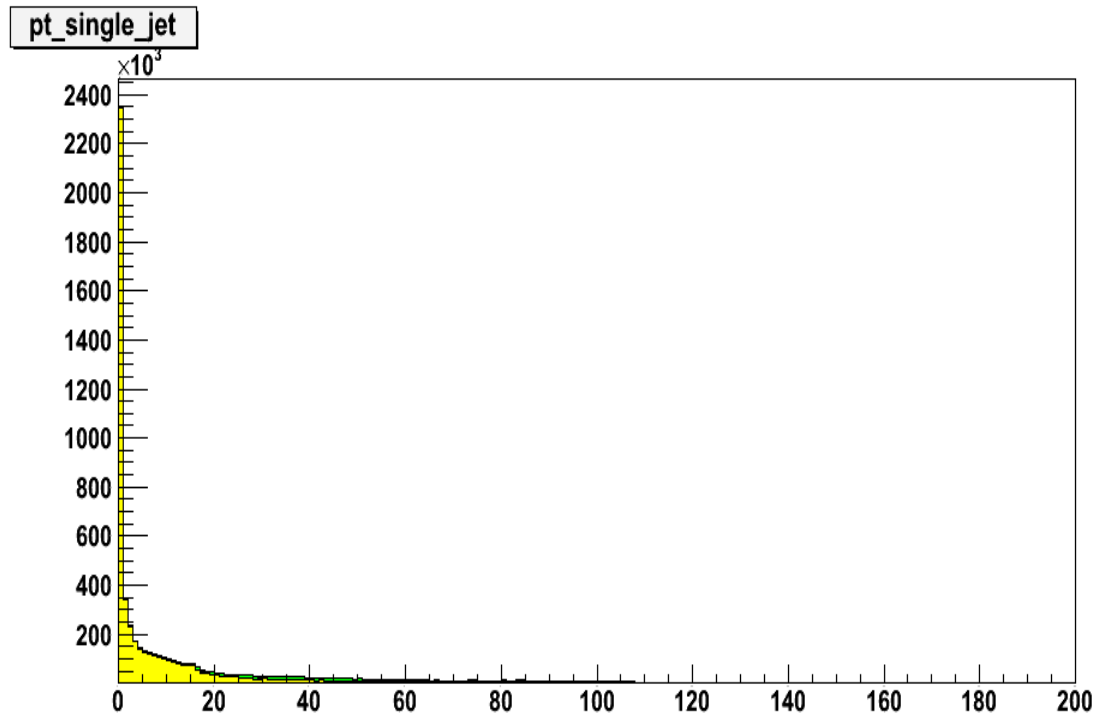
Current status (after last meeting )

08/07/2018

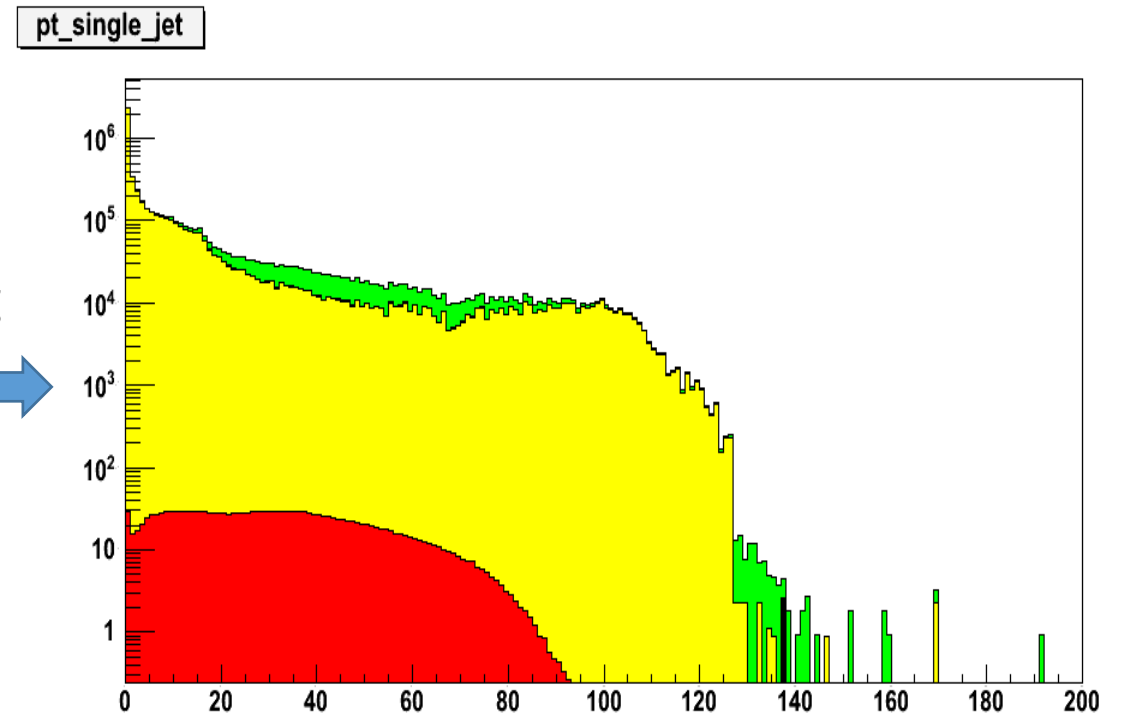
# Trial to suppress backgrounds: Pt cut for jet

-- Cut :  $Pt(\text{jet1}) < 5\text{GeV} \parallel Pt(\text{jet2}) < 5\text{ GeV}$

-- something tight cut but a trial



log  
→



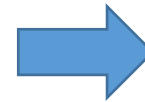
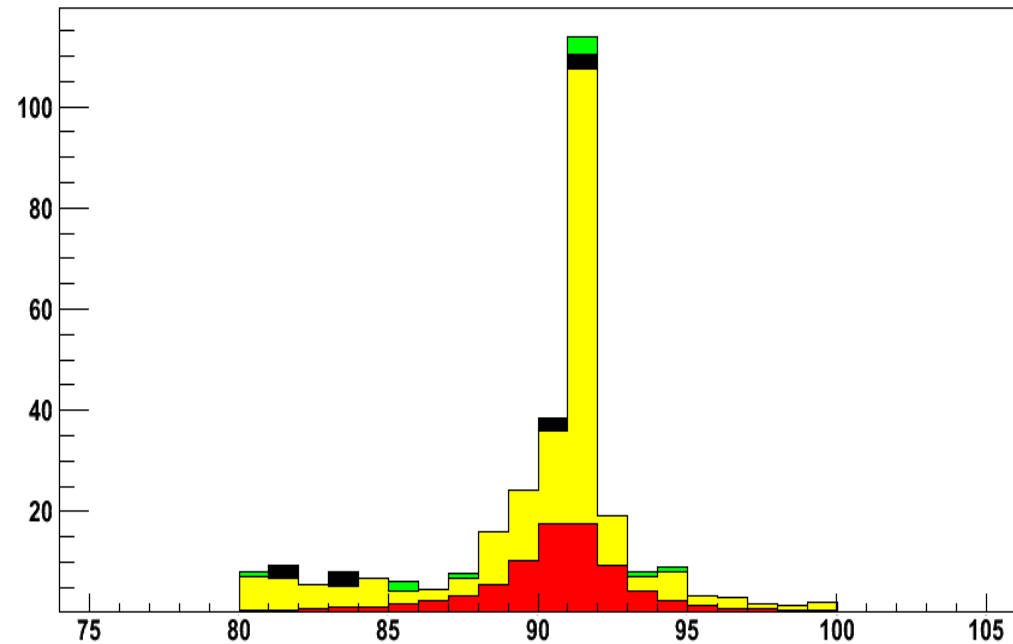
# Cut Flow Table

	Signal	SM lep.	SM had.	sznu_sl	sze_sl	ww_sl	zz_sl
Missing mass > M(di-jets)	109	35301	144	5	0	1301	1473
$80 < M(\text{dimuon}) < 100$	92	11139	0	0	0	135	412
$120 < \text{RecM}(\text{dimuon}) < 160$	92	3212	0	0	0	91	193
$N(\text{pfo}) > 15$	87	159	0	0	0	91	192
$Pt(\text{total visible}) > 15$	81	56	0	0	0	91	43
Min angle > 0.3	76	47	0	0	0	21	39
Missing Mass & M(dijets)	61	18	0	0	0	8	5

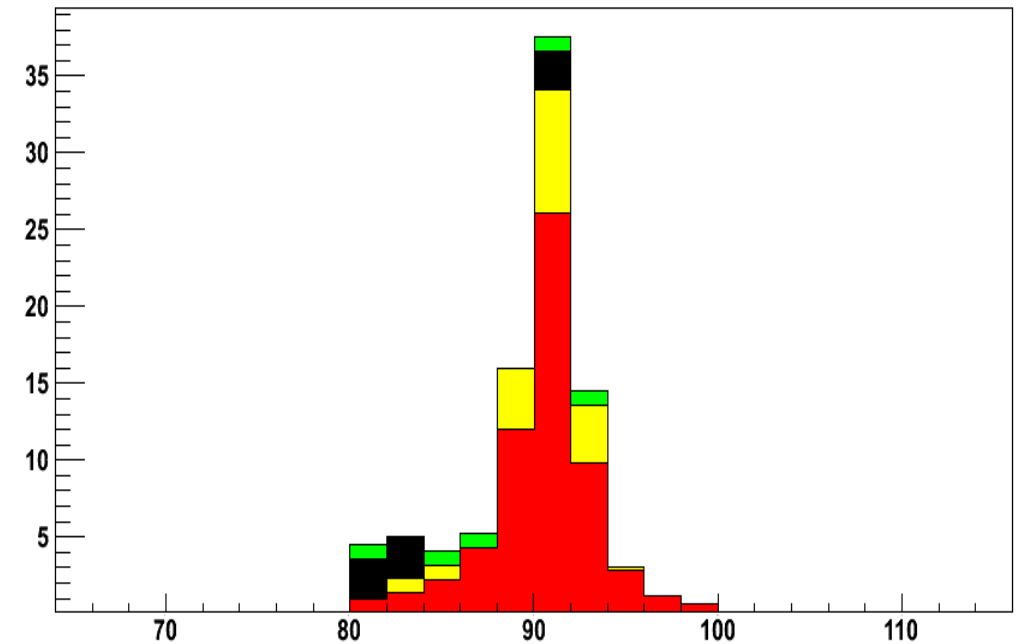
# Di-muon Invariant Mass (final)

Background events seems to be suppressed at some level...

m\_dimuon

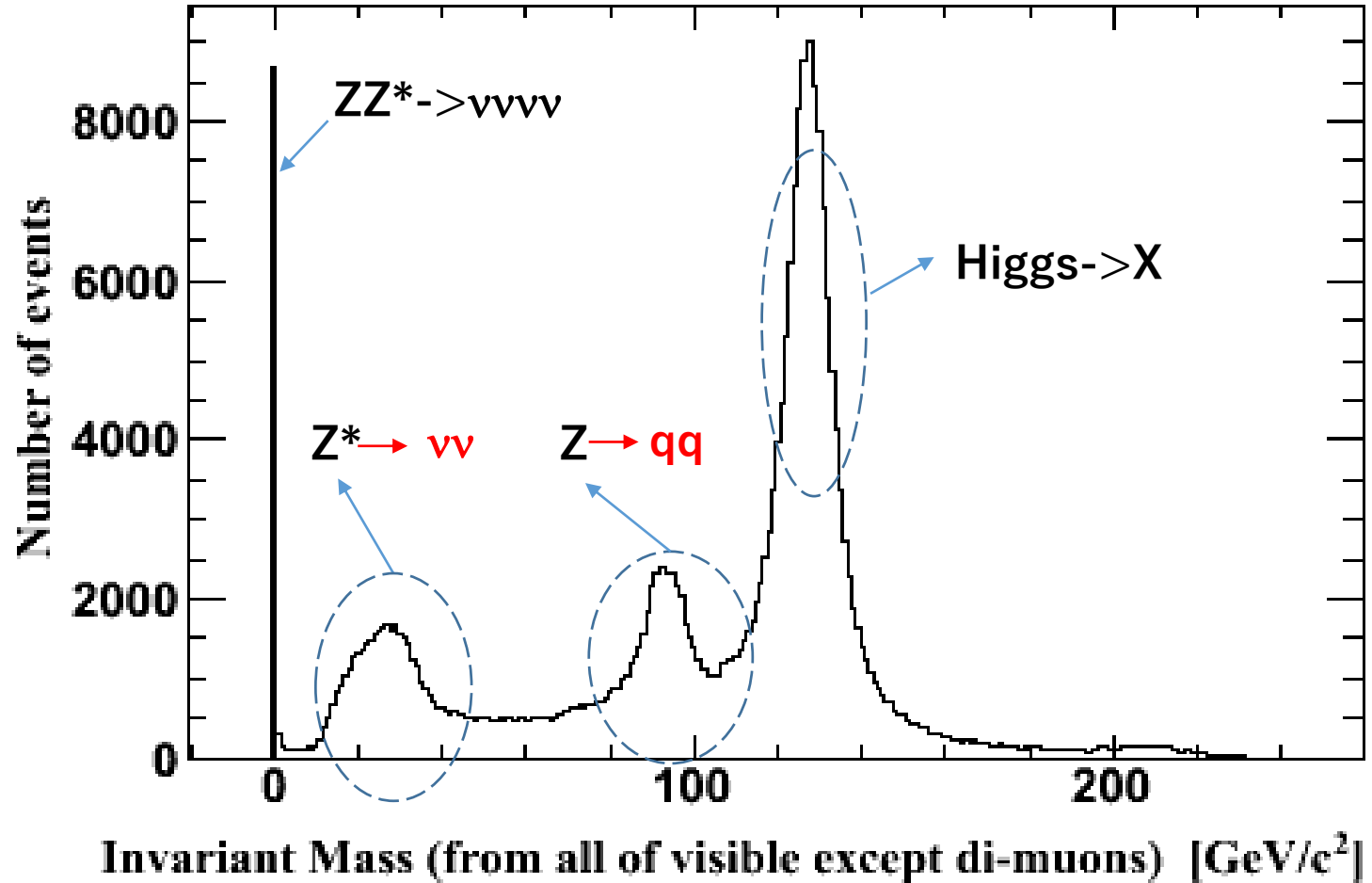


m\_dimuon

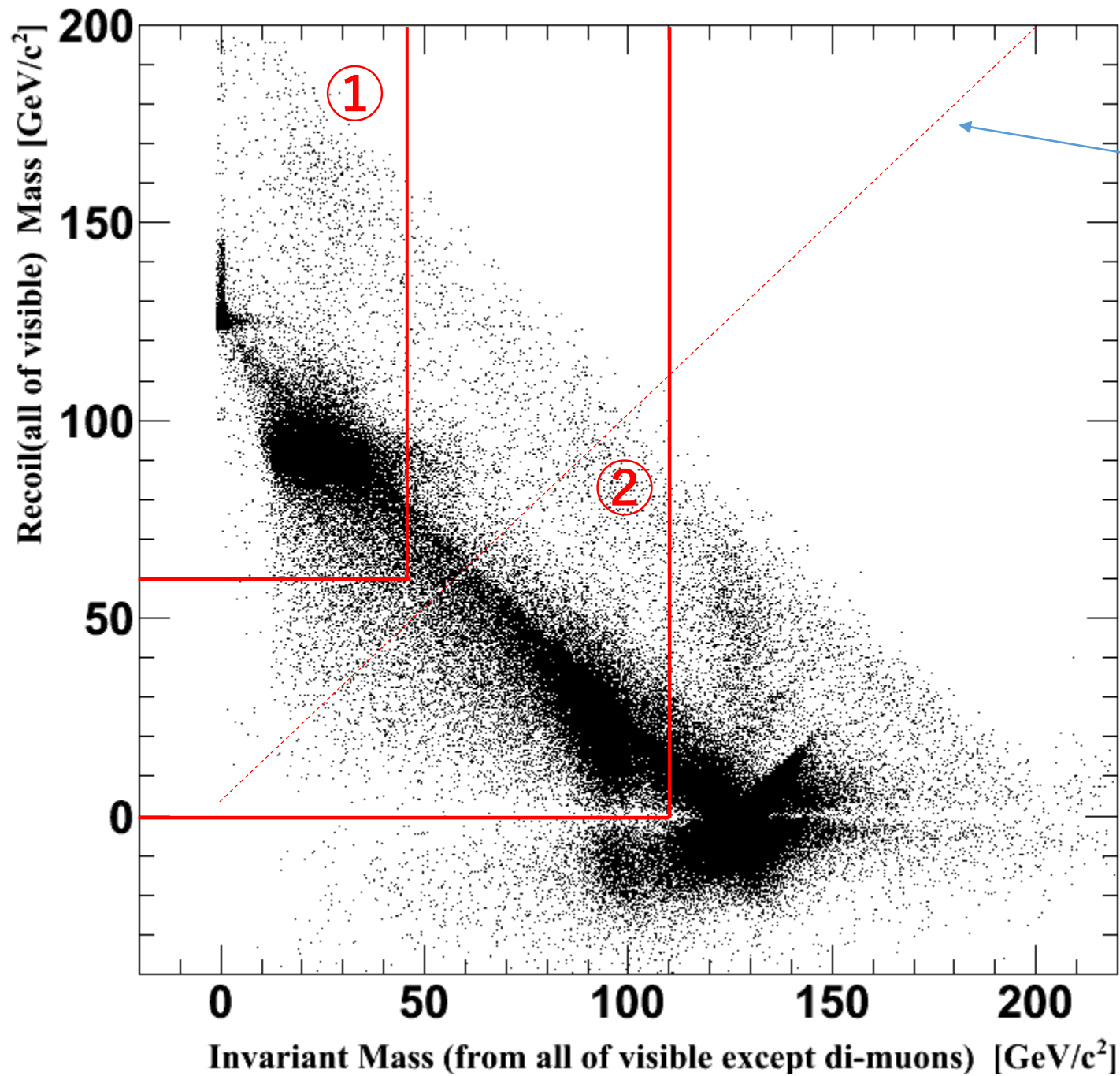


*## Note : Binning is changed .*

# $ZZ^* \rightarrow qq\nu\nu$ channel



Suggestion is to change :  $Z^* \rightarrow \nu\nu$  ,  $Z \rightarrow qq$



Missing Mass (Z → νν) = Dijet Mass (Z → qq)

1.  $H \rightarrow ZZ^* \rightarrow \nu\nu qq$

- Missing M > Dijet Invariant M
- Missing M > 60 GeV
- Dijet Invariant M < 45 GeV

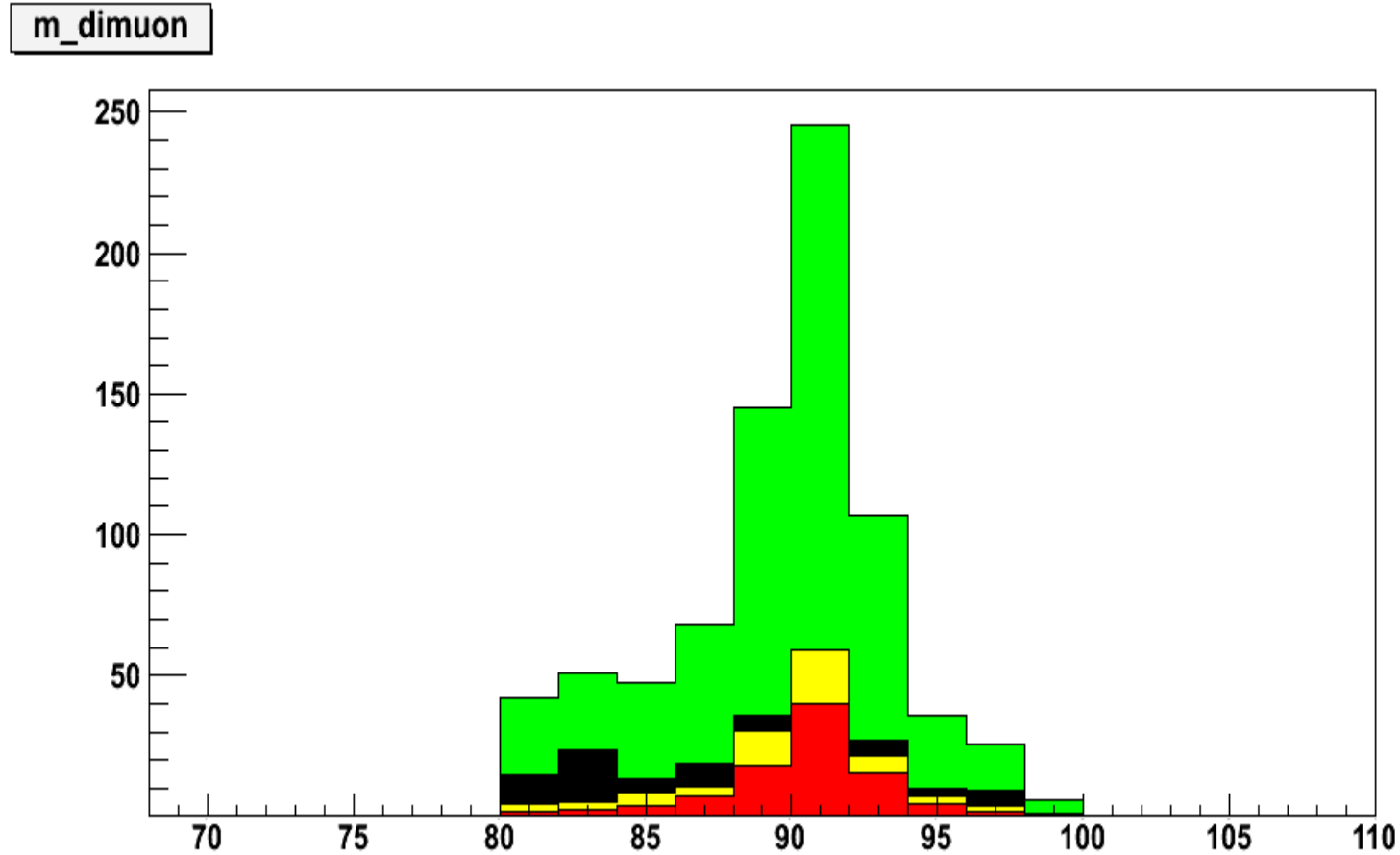
2.  $H \rightarrow ZZ^* \rightarrow qq\nu\nu$

- Missing M < Dijet Invariant M
- Missing M > 0 GeV
- Dijet Invariant M < 110 GeV

# Cut Flow Table : $Z \rightarrow qq$ , $Z^* \rightarrow \nu\nu$

	Signal	SM lep.	SM had.	sznu_sl	sze_sl	ww_sl	zz_sl
Missing mass > M(di-jets)	650	286190	654	0	11	5995	310579
$80 < M(\text{dimuon}) < 100$	557	115826	1	0	0	666	201551
$120 < \text{Rec}M(\text{dimuon}) < 160$	554	22056	1	0	0	277	17331
$N(\text{pfo}) > 15$	550	1126	1	0	0	277	17331
$Pt(\text{total visible}) > 15$	136	109	0	0	0	271	1298
Min angle > 0.3	129	88	0	0	0	141	1220
Missing Mass & M(dijets)	95	56	0	0	0	60	561

# Di-muon Invariant Mass



For this side, “zz\_sl” component is dominant one. Note that the “Pt” cut is applied.