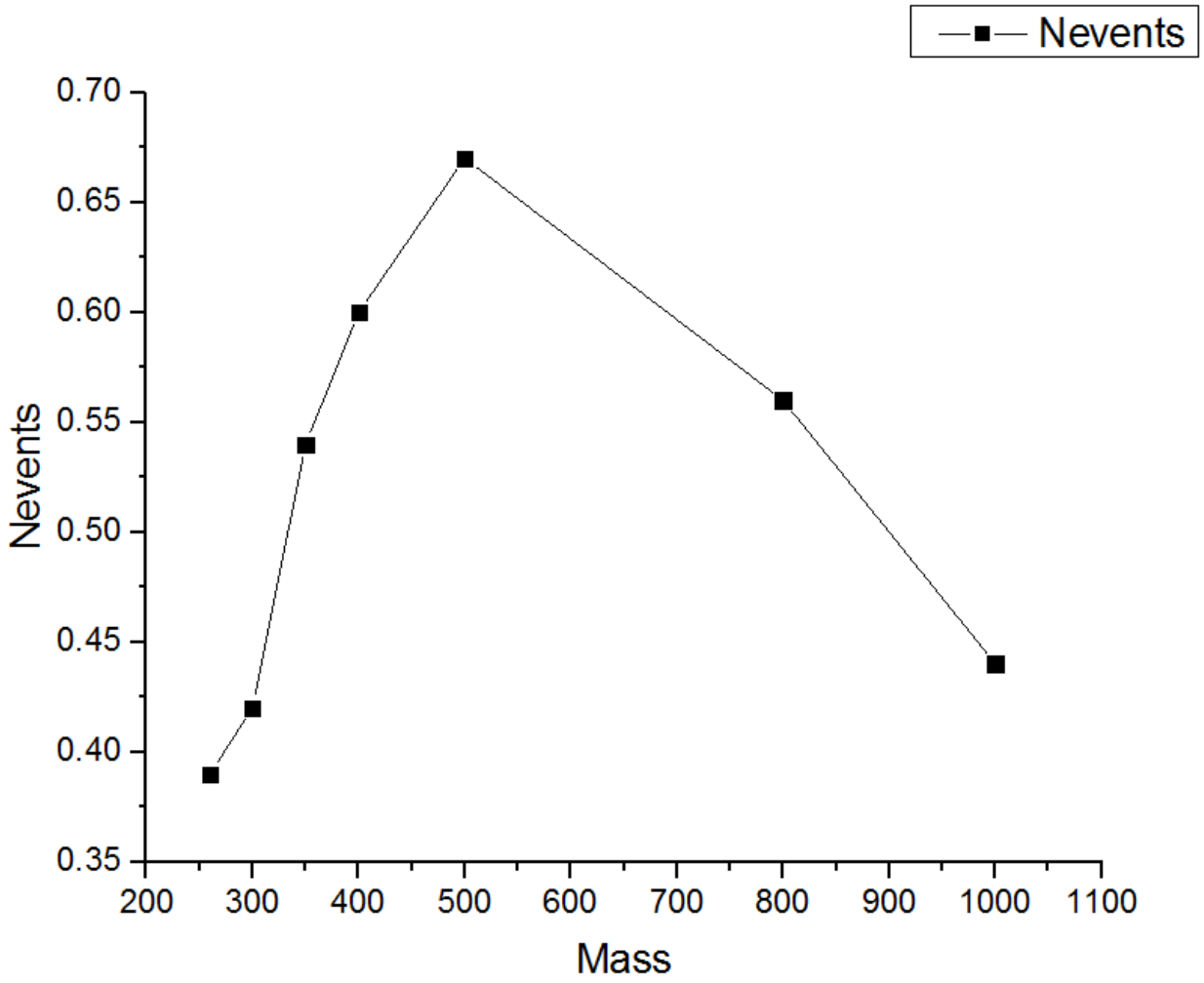
1 lepton case

Mass point	All	Cut	Eff	Expected signal(*xsec)
Sm	105516	9108	0.086	0.60
260GeV	53897	3063	0.056	0.39
300GeV	107756	7219	0.066	0.42
350GeV	53475	4171	0.078	0.54
400GeV	53368	4628	0.086	0.60
500GeV	53770	5131	0.095	0.67
800GeV	53392	4278	0.080	0.56
1000GeV	53577	3398	0.063	0.44

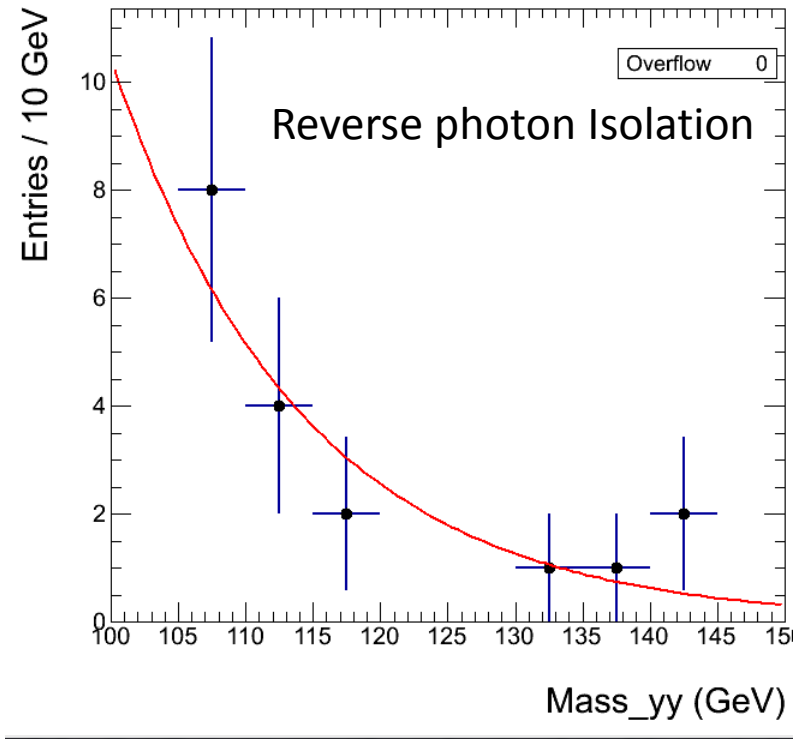
- The rise in the mass point gives better photon selection and better jet selection

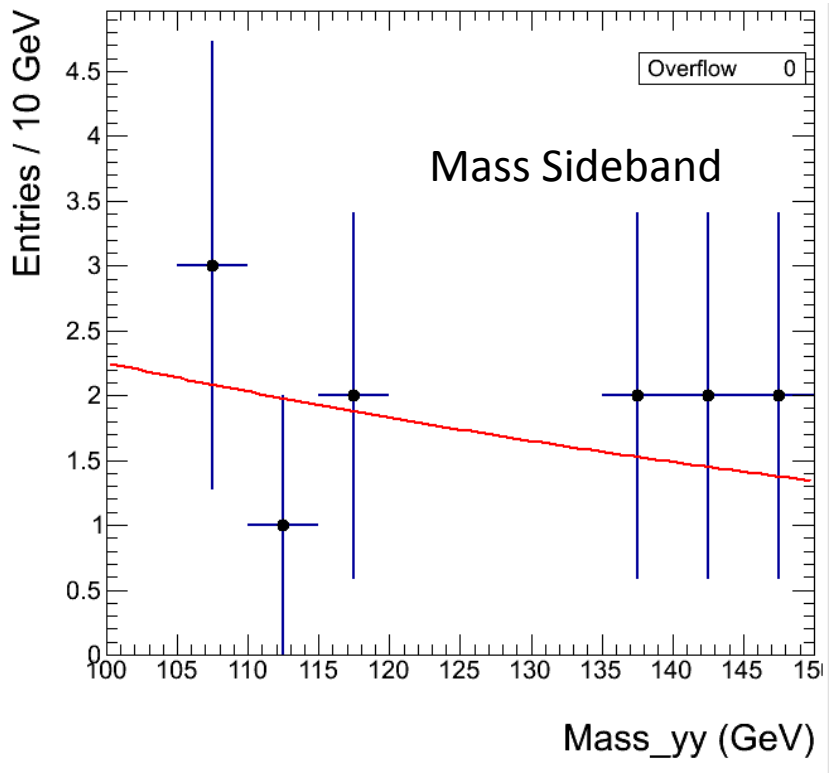
- When in the boost frame(mass 800 and 1000)the lepton selection efficiency cut drops

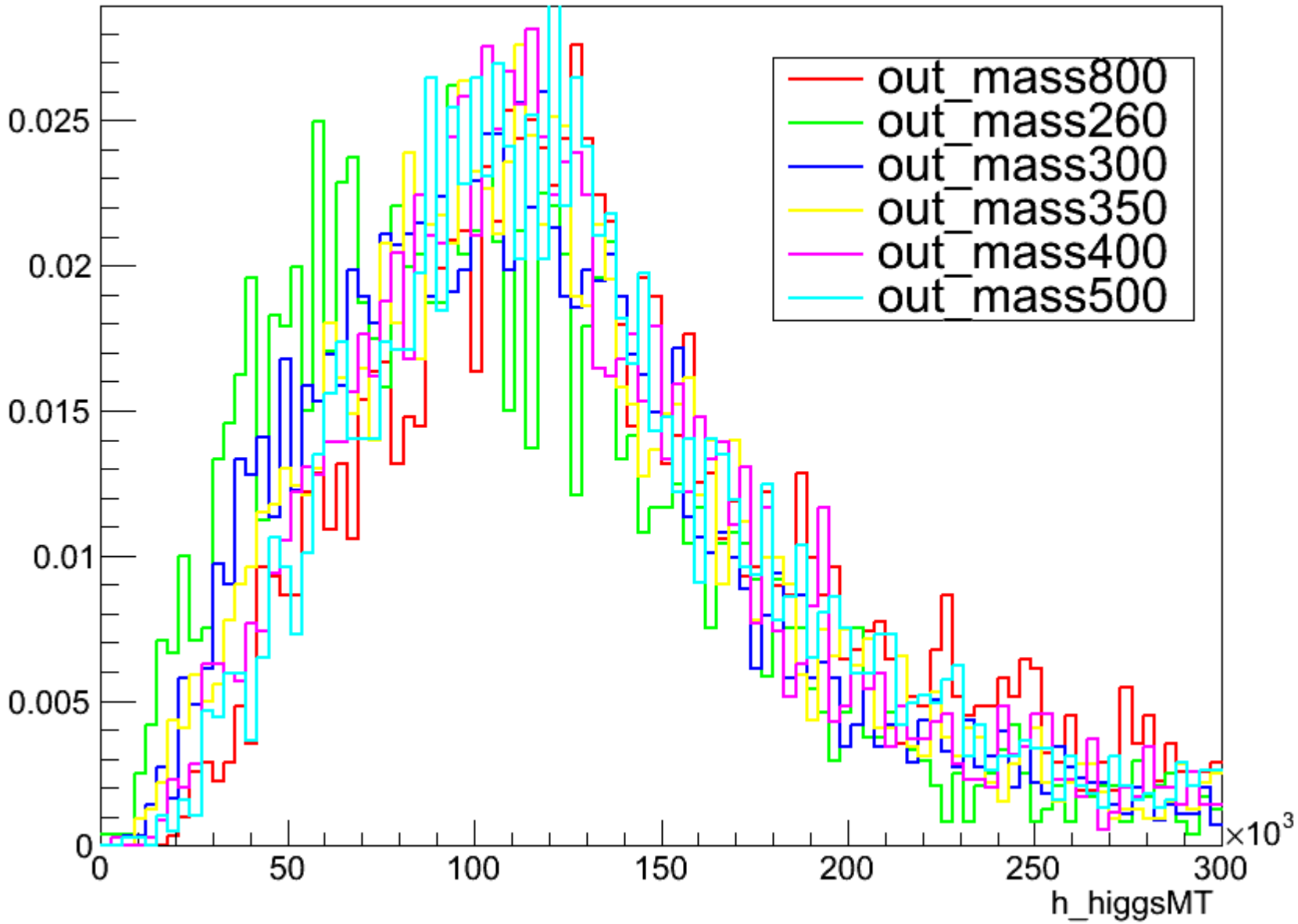


Background estimation

- Using reverse isolation and scale to mass sideband
- 2.2 background
- Validated the shape by MC






out_mass800
out_mass260
out_mass300
out_mass350
out_mass400
out_mass500
0.025
0.02
0.015
0.01
0.005
0
0
50
100
150
200
250
300
×10³
h_higgsMT

Loose the cut on lepton PT

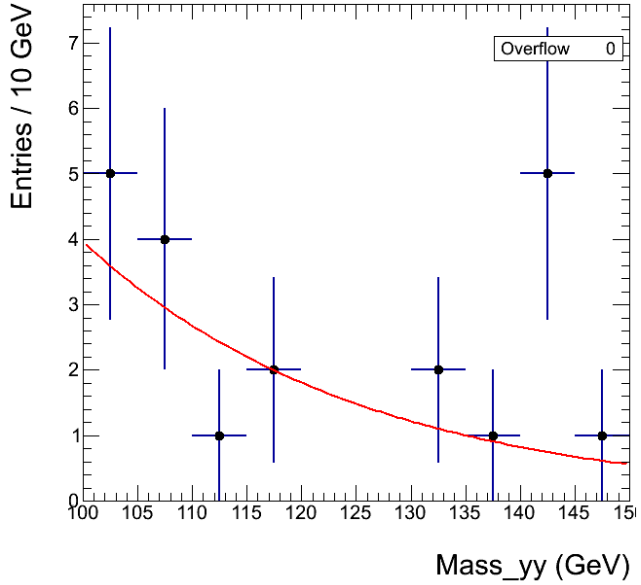
Signal

- 8262 events left in MC->
- cut efficiency = 0.076
- 0.53*Xs events expected

Background

21 events on the plot

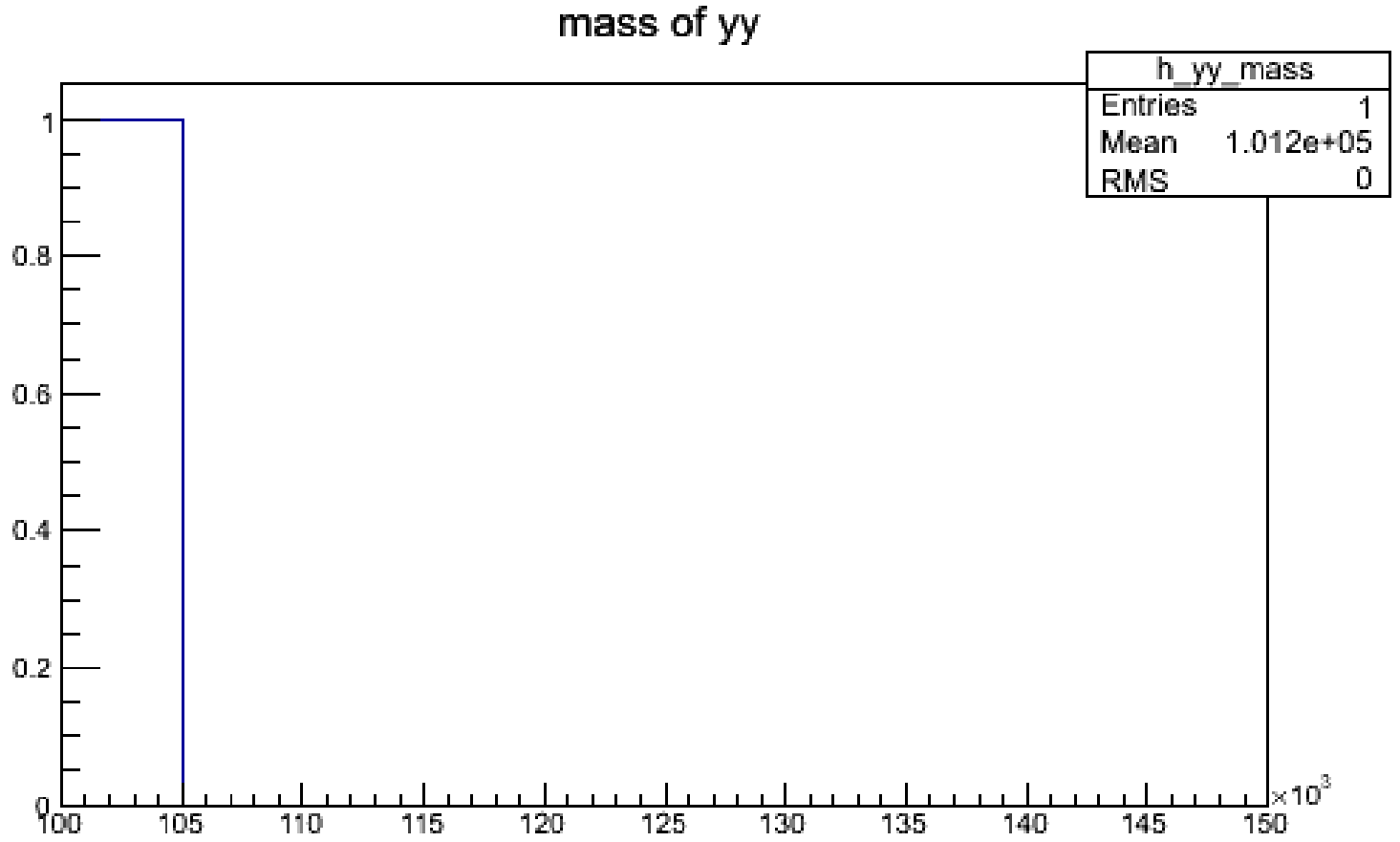
- Using part of the data(80% of old one)
- Background rise faster than Signal
- s/√B=0.44/1.48=0.30 -> 0.53/1.73= 0.31



2 lepton case

1 event in mass sideband region

- 2% of efficiency improvement in this case
- Promising? Need to run more data



backup:

- Expected events in signal region
- xs(pp->H->hh) *2*Br(h->yy)* Br(h->ww)*2*Br(w->lv)*Br(w->jj)*eff*lumi
  = xs*0.00228*0.215*0.3*0.6*4*0.07*20000
  = 0.5*xs
- xs(pp->H->hh) *2*Br(h->yy)* Br(h->ww)*Br(w->lv)^2*Br(w->jj)*eff*lumi
  = 0.1*xs

Bveto effect

MV1	B-tagging eff	Tth cut efficiency	Signal cut efficiency
0.39	80%	10%	80%
0.81	70%	17%	89%