Table 1: JES percent Δ Acceptance in High Mass control region

samples	**enujj**	**munujj**
herwig.ww	9.45	11.81
herwig.wz	7.11	9.05
herwig.zz	14.44	10.59
herwig.vv	8.93	11.10
mcatnlo.ttbar	4.78	7.30
mcatnlo.top	5.16	7.54
mcatnlo.singletop	8.37	9.41
alpgen.wjets	10.99	10.75
alpgen.zjets	18.04	9.08
qcd.alpgen	-	-
rsg.m500.kmpl0_1	9.78	12.20
rsg.m750.kmpl0_1	2.57	2.30
rsg.m1000.kmpl0_1	2.88	2.03
rsg.m1250.kmpl0_1	5.30	3.47
rsg.m1500.kmpl0_1	4.33	4.07
wprime.wz.m500	10.44	11.49
wprime.wz.m600	2.57	4.37
wprime.wz.m700	1.44	1.83
wprime.wz.m800	0.81	0.12
wprime.wz.m900	0.83	0.58
wprime.wz.m1000	0.71	0.33
wprime.wz.m1100	0.67	0.68
wprime.wz.m1200	0.42	1.16
wprime.wz.m1300	1.46	0.89
wprime.wz.m1400	1.70	3.30
wprime.wz.m1500	1.49	2.42
afii.kkg.lvjj.m500	9.61	13.79
afii.kkg.lvjj.m600	4.12	5.12
afii.kkg.lvjj.m700	2.83	2.63
afii.kkg.lvjj.m800	2.54	3.06
afii.kkg.lvjj.m900	3.37	2.79
afii.kkg.lvjj.m1000	3.31	2.72
afii.kkg.lvjj.m1100	4.90	3.71
afii.kkg.lvjj.m1200	3.65	4.11
afii.kkg.lvjj.m1300	4.77	5.77
afii.kkg.lvjj.m1400	8.35	4.24
afii.kkg.lvjj.m1500	4.89	6.65

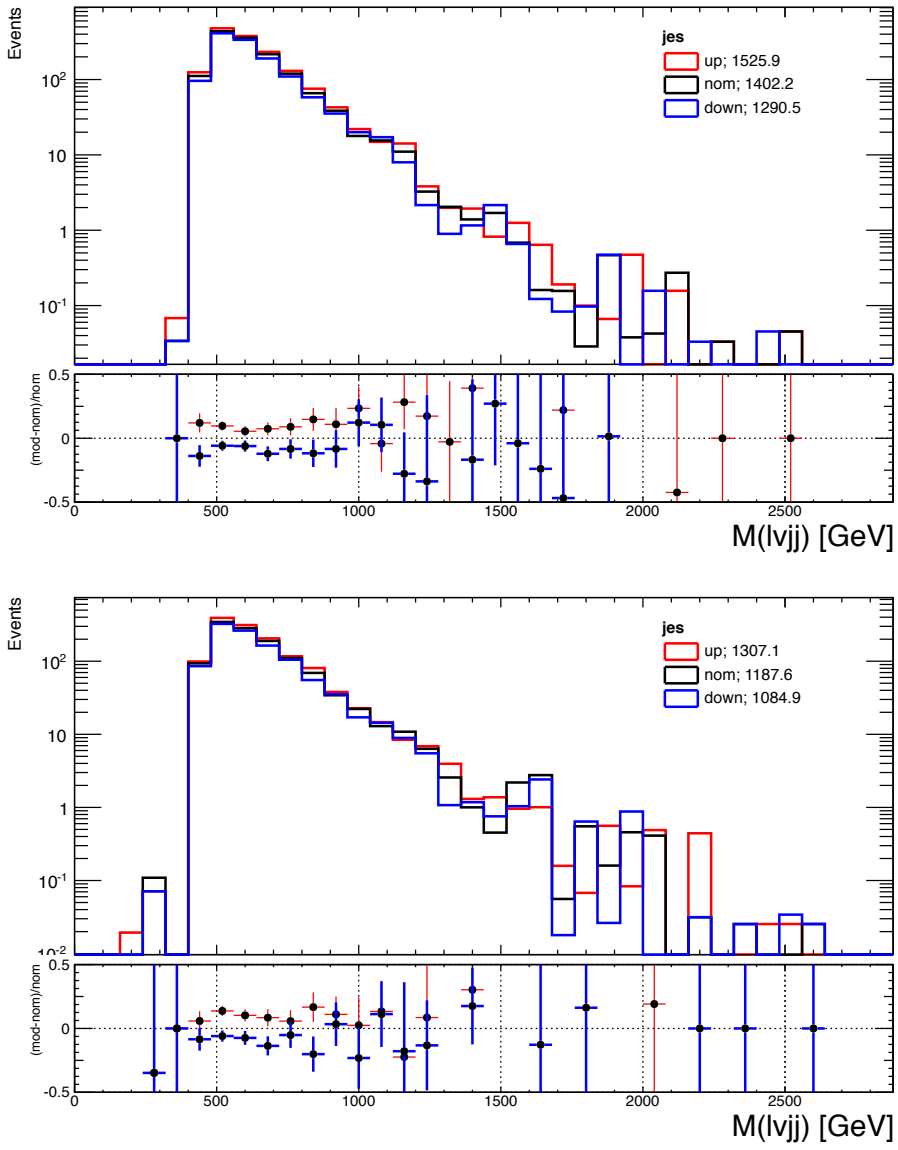

Figure 1: Transverse mass of the system for electron (top) and muon (bottom) channels

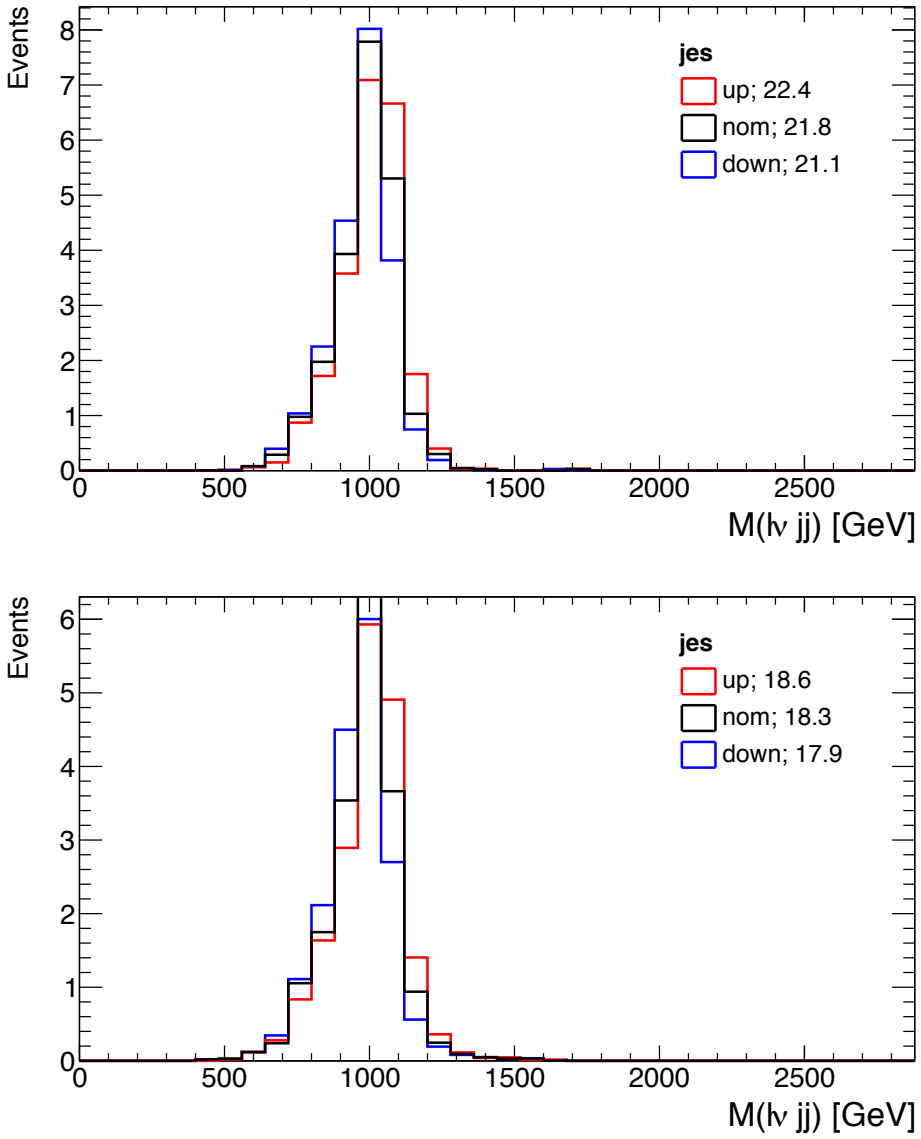

Figure 2: G* (M=1000) Transverse mass of the system for electron (top) and muon (bottom) channels

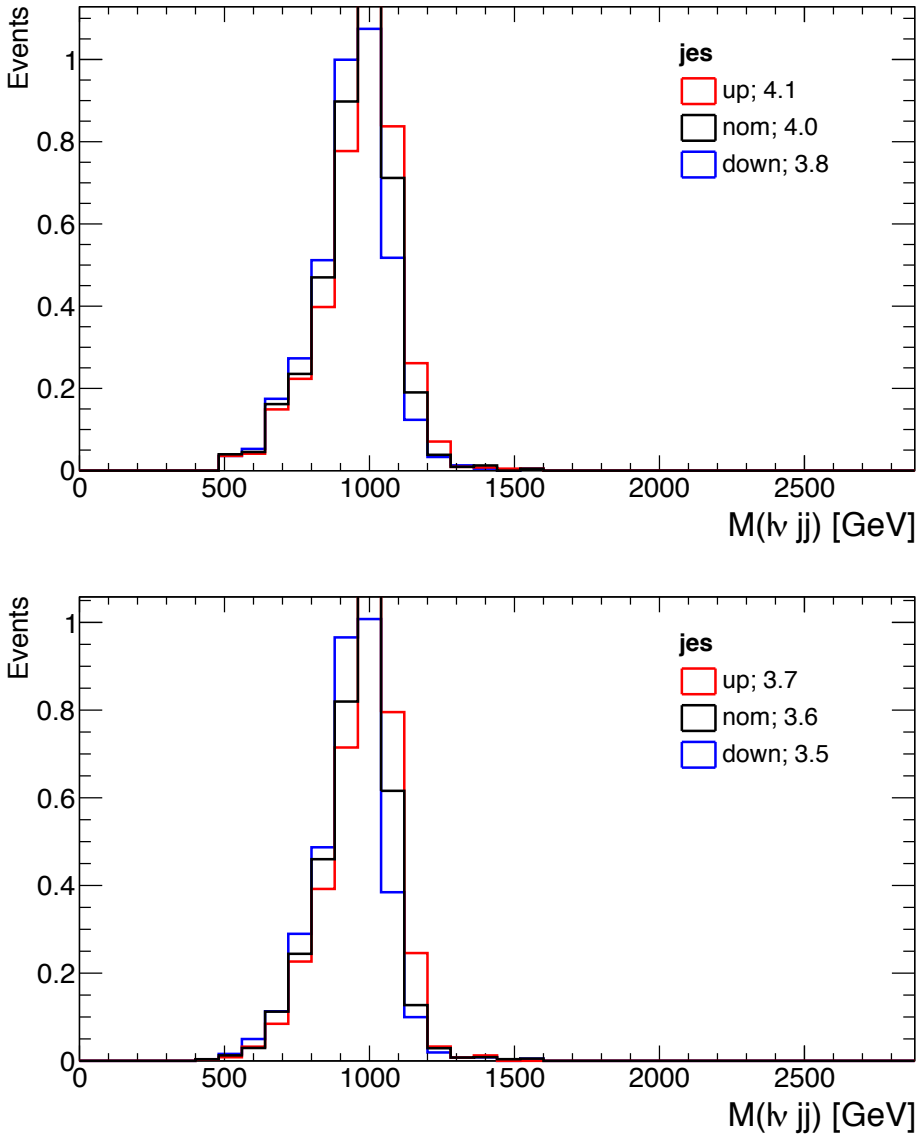

Figure 3: G_{kk} (M=1000) Transverse mass of the system for electron (top) and muon (bottom) channels

Table 1: JER percent Δ Acceptance in signal region

samples	**enujj**	**munujj**
herwig.ww	0.40	0.60
herwig.wz	1.59	0.61
herwig.zz	7.39	15.15
herwig.vv	0.56	0.40
mcatnlo.ttbar	0.06	0.63
mcatnlo.top	0.20	0.38
mcatnlo.singletop	1.39	1.55
alpgen.wjets	1.14	0.27
alpgen.zjets	6.96	7.57
qcd.alpgen	-	-
rsg.m500.kmpl0_1	1.72	1.46
rsg.m750.kmpl0_1	0.64	1.10
rsg.m1000.kmpl0_1	0.80	0.54
rsg.m1250.kmpl0_1	1.16	1.57
rsg.m1500.kmpl0_1	1.27	0.64
wprime.wz.m500	1.76	0.64
wprime.wz.m600	1.16	1.34
wprime.wz.m700	0.90	0.90
wprime.wz.m800	1.10	0.13
wprime.wz.m900	0.95	1.00
wprime.wz.m1000	0.50	1.00
wprime.wz.m1100	1.25	0.69
wprime.wz.m1200	0.32	2.37
wprime.wz.m1300	2.39	1.16
wprime.wz.m1400	1.55	4.60
wprime.wz.m1500	1.53	1.26
afii.kkg.lvjj.m500	2.40	1.26
afii.kkg.lvjj.m600	1.32	0.90
afii.kkg.lvjj.m700	0.90	0.99
afii.kkg.lvjj.m800	0.26	0.25
afii.kkg.lvjj.m900	1.35	0.44
afii.kkg.lvjj.m1000	0.90	1.41
afii.kkg.lvjj.m1100	2.18	2.98
afii.kkg.lvjj.m1200	0.82	2.80
afii.kkg.lvjj.m1300	1.67	1.88
afii.kkg.lvjj.m1400	2.98	3.18
afii.kkg.lvjj.m1500	2.25	4.59

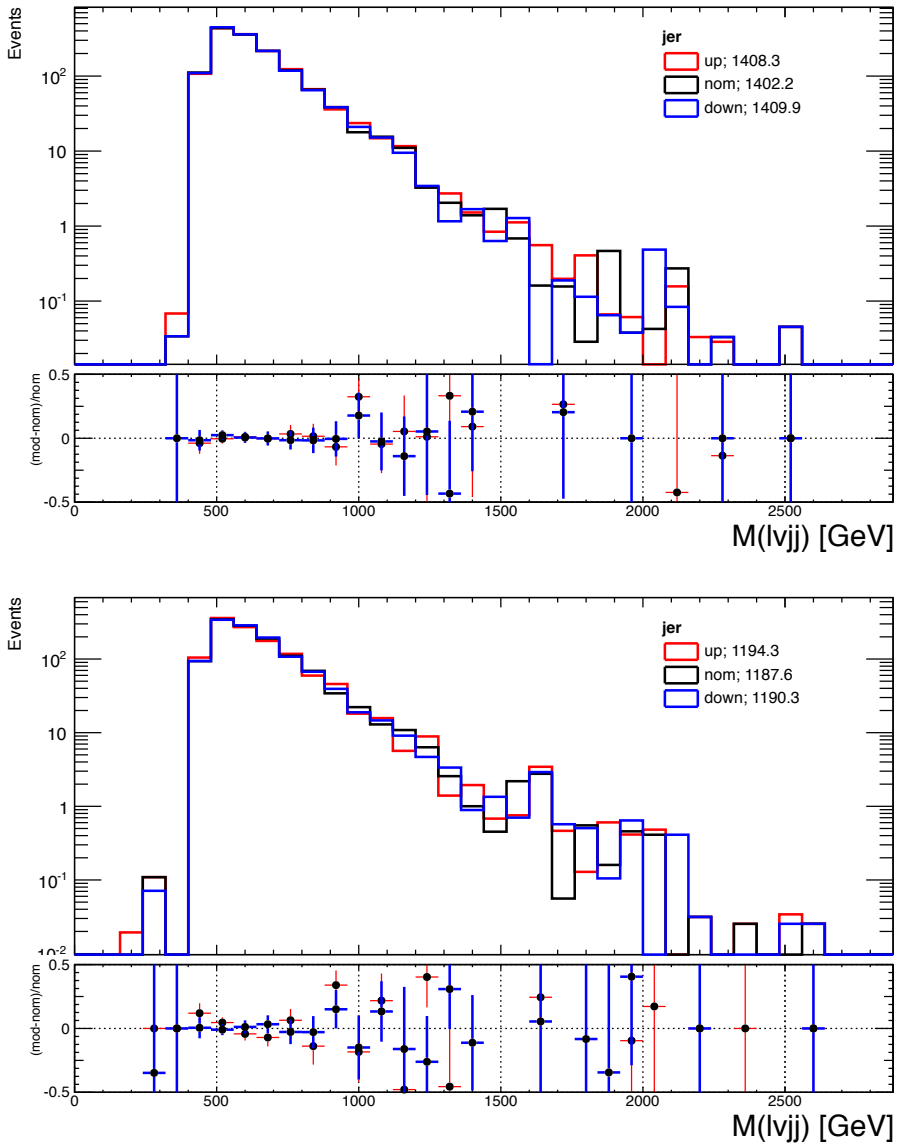

Figure 1: Transverse mass of the system for electron (top) and muon (bottom) channels

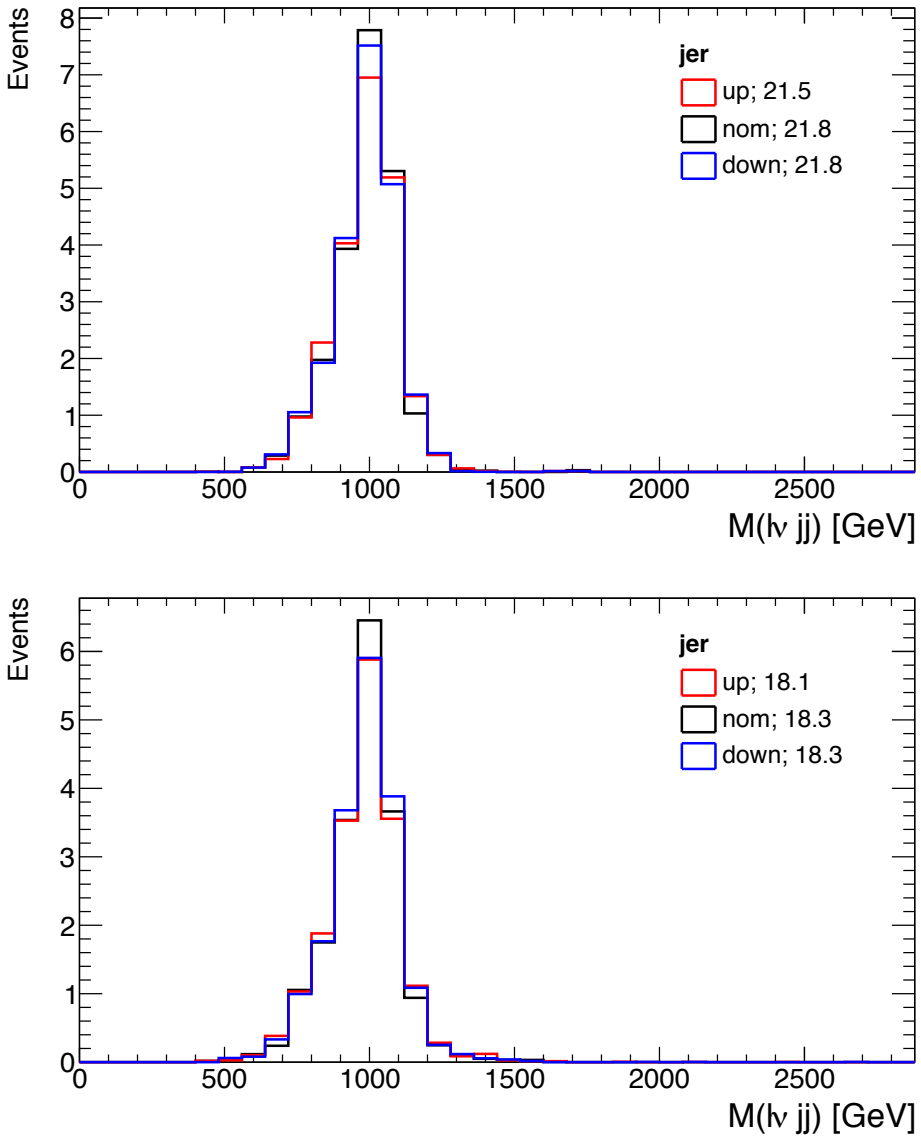

Figure 2: Transverse mass of the system for electron (top) and muon (bottom) channels

Table 1: LES percent Δ acceptance in signal region

samples	**enujj**	**munujj**
herwig.ww	0.14	0.38
herwig.wz	0.01	0.19
herwig.zz	0.00	0.32
herwig.vv	0.11	0.25
mcatnlo.ttbar	0.18	0.08
mcatnlo.top	0.16	0.14
mcatnlo.singletop	0.08	0.58
alpgen.wjets	0.10	0.40
alpgen.zjets	0.80	0.86
qcd.alpgen	-	-
rsg.m500.kmpl0_1	0.31	0.15
rsg.m750.kmpl0_1	0.04	0.22
rsg.m1000.kmpl0_1	0.10	0.48
rsg.m1250.kmpl0_1	0.12	0.70
rsg.m1500.kmpl0_1	0.18	0.11
wprime.wz.m500	0.16	0.79
wprime.wz.m600	0.08	0.10
wprime.wz.m700	0.11	0.23
wprime.wz.m800	0.07	0.03
wprime.wz.m900	0.00	0.04
wprime.wz.m1000	0.08	0.19
wprime.wz.m1100	0.09	0.45
wprime.wz.m1200	0.00	0.10
wprime.wz.m1300	0.00	0.33
wprime.wz.m1400	0.03	0.84
wprime.wz.m1500	0.00	0.00
afii.kkg.lvjj.m500	0.32	0.70
afii.kkg.lvjj.m600	0.11	0.17
afii.kkg.lvjj.m700	0.06	0.07
afii.kkg.lvjj.m800	0.00	0.21
afii.kkg.lvjj.m900	0.00	0.00
afii.kkg.lvjj.m1000	0.00	0.30
afii.kkg.lvjj.m1100	0.37	0.33
afii.kkg.lvjj.m1200	0.00	0.28
afii.kkg.lvjj.m1300	0.63	0.54
afii.kkg.lvjj.m1400	0.00	1.19
afii.kkg.lvjj.m1500	0.00	0.14

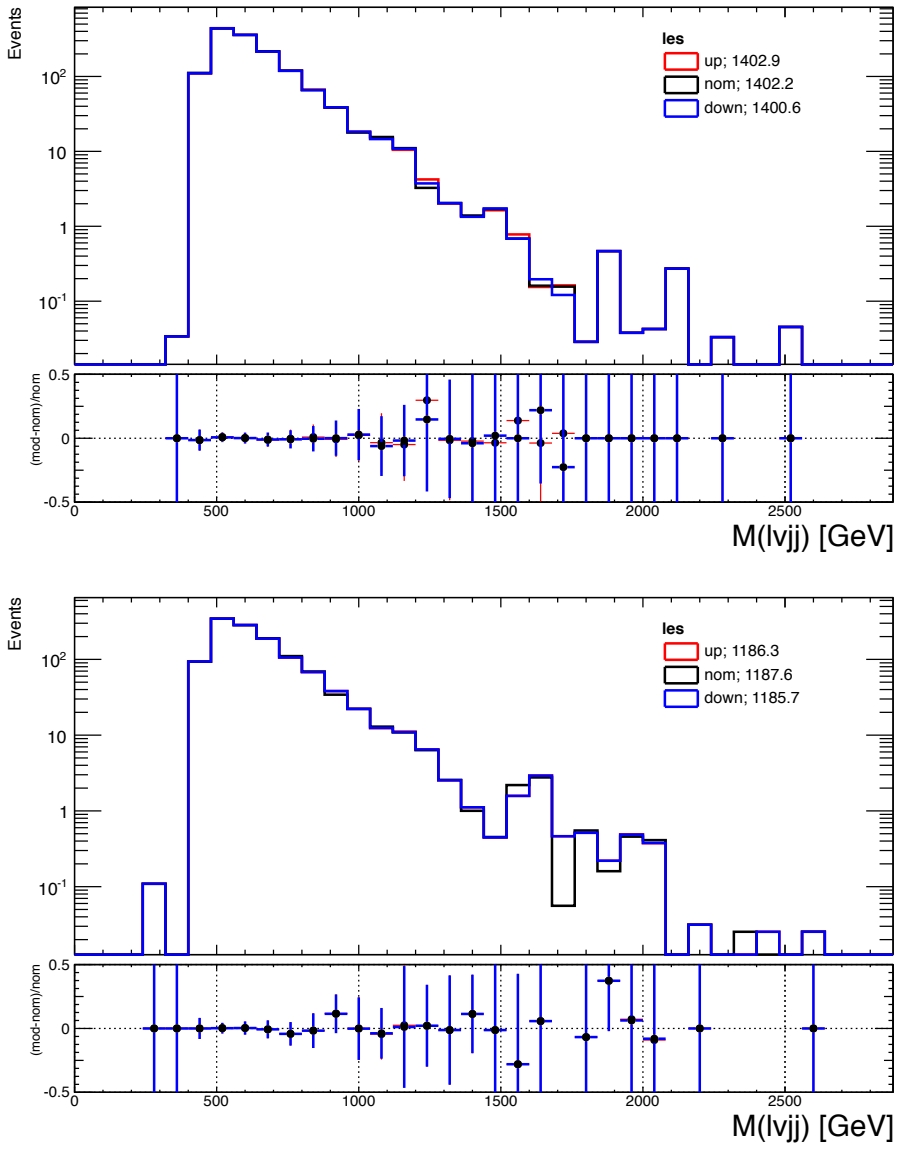

Figure 1: Transverse mass of the system for electron (top) and muon (bottom) channels

Table 1: ler Fractional Δ Acceptance in High Mass control region

samples	**enujj**	**munujj**
herwig.ww	0.11	0.08
herwig.wz	0.14	0.70
herwig.zz	0.00	0.32
herwig.vv	0.12	0.09
mcatnlo.ttbar	0.14	0.79
mcatnlo.top	0.12	0.69
mcatnlo.singletop	0.07	0.14
alpgen.wjets	0.42	1.21
alpgen.zjets	1.59	2.37
qcd.alpgen	-	-
rsg.m500.kmpl0_1	0.41	0.07
rsg.m750.kmpl0_1	0.08	0.11
rsg.m1000.kmpl0_1	0.19	0.29
rsg.m1250.kmpl0_1	0.15	0.84
rsg.m1500.kmpl0_1	0.23	0.40
wprime.wz.m500	0.22	0.51
wprime.wz.m600	0.03	0.53
wprime.wz.m700	0.14	0.30
wprime.wz.m800	0.13	0.55
wprime.wz.m900	0.00	0.87
wprime.wz.m1000	0.12	0.69
wprime.wz.m1100	0.10	0.12
wprime.wz.m1200	0.08	1.68
wprime.wz.m1300	0.00	0.42
wprime.wz.m1400	0.04	2.01
wprime.wz.m1500	0.00	1.60
afii.kkg.lvjj.m500	0.24	0.64
afii.kkg.lvjj.m600	0.11	0.02
afii.kkg.lvjj.m700	0.06	0.08
afii.kkg.lvjj.m800	0.06	0.14
afii.kkg.lvjj.m900	0.03	0.26
afii.kkg.lvjj.m1000	0.00	0.36
afii.kkg.lvjj.m1100	0.46	0.70
afii.kkg.lvjj.m1200	0.00	0.64
afii.kkg.lvjj.m1300	0.82	1.12
afii.kkg.lvjj.m1400	0.00	1.19
afii.kkg.lvjj.m1500	0.00	0.14

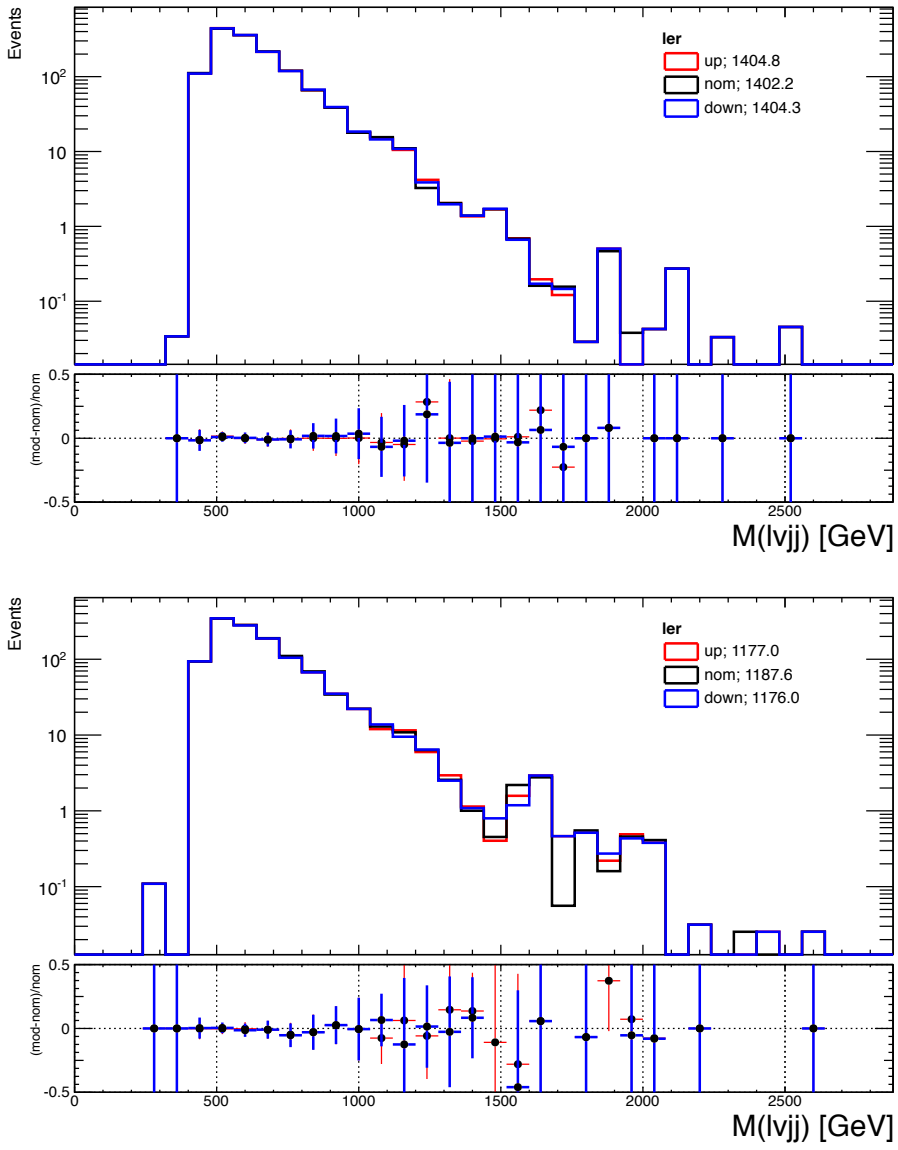

Figure 1: Transverse mass of the system for electron (top) and muon (bottom) channels

Table 1: Lepton ID scale factor, fractional Δ Acceptance in High Mass control region

samples	**enujj**	**munujj**
herwig.ww	0.92	0.04
herwig.wz	0.93	0.04
herwig.zz	0.83	0.04
herwig.vv	0.92	0.04
mcatnlo.ttbar	0.89	0.04
mcatnlo.top	0.88	0.04
mcatnlo.singletop	0.88	0.04
alpgen.wjets	0.96	0.04
alpgen.zjets	0.92	0.04
qcd.alpgen	-	-
rsg.m500.kmpl0_1	0.86	0.04
rsg.m750.kmpl0_1	0.87	0.04
rsg.m1000.kmpl0_1	0.90	0.04
rsg.m1250.kmpl0_1	0.95	0.04
rsg.m1500.kmpl0_1	1.00	0.04
wprime.wz.m500	0.91	0.04
wprime.wz.m600	0.89	0.04
wprime.wz.m700	0.89	0.04
wprime.wz.m800	0.87	0.04
wprime.wz.m900	0.87	0.04
wprime.wz.m1000	0.88	0.04
wprime.wz.m1100	0.89	0.04
wprime.wz.m1200	0.91	0.04
wprime.wz.m1300	0.92	0.04
wprime.wz.m1400	0.92	0.04
wprime.wz.m1500	0.94	0.04
afii.kkg.lvjj.m500	0.86	0.04
afii.kkg.lvjj.m600	0.86	0.04
afii.kkg.lvjj.m700	0.85	0.04
afii.kkg.lvjj.m800	0.86	0.04
afii.kkg.lvjj.m900	0.87	0.04
afii.kkg.lvjj.m1000	0.86	0.04
afii.kkg.lvjj.m1100	0.88	0.04
afii.kkg.lvjj.m1200	0.88	0.04
afii.kkg.lvjj.m1300	0.88	0.04
afii.kkg.lvjj.m1400	0.86	0.04
afii.kkg.lvjj.m1500	0.89	0.04

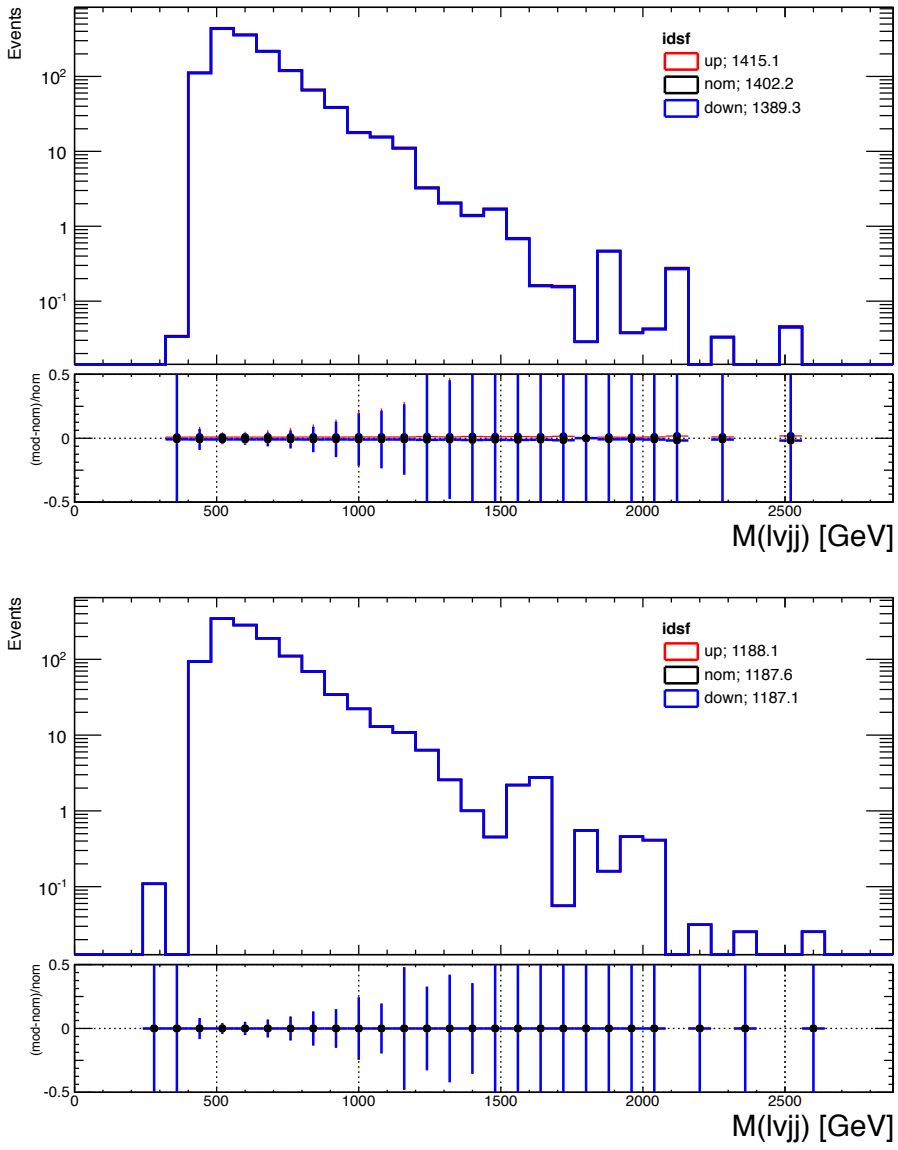

Figure 1: Transverse mass of the system for electron (top) and muon (bottom) channels

Table 1: Lepton isolation scale factor, fractional Δ Acceptance in High Mass control region

samples	**enujj**	**munujj**
herwig.ww	2.00	1.00
herwig.wz	2.00	1.00
herwig.zz	2.00	1.00
herwig.vv	2.00	1.00
mcatnlo.ttbar	2.00	1.00
mcatnlo.top	2.00	1.00
mcatnlo.singletop	2.00	1.00
alpgen.wjets	2.00	1.00
alpgen.zjets	2.00	1.00
qcd.alpgen	-	-
rsg.m500.kmpl0_1	2.00	1.00
rsg.m750.kmpl0_1	2.00	1.00
rsg.m1000.kmpl0_1	2.00	1.00
rsg.m1250.kmpl0_1	2.00	1.00
rsg.m1500.kmpl0_1	2.00	1.00
wprime.wz.m500	2.00	1.00
wprime.wz.m600	2.00	1.00
wprime.wz.m700	2.00	1.00
wprime.wz.m800	2.00	1.00
wprime.wz.m900	2.00	1.00
wprime.wz.m1000	2.00	1.00
wprime.wz.m1100	2.00	1.00
wprime.wz.m1200	2.00	1.00
wprime.wz.m1300	2.00	1.00
wprime.wz.m1400	2.00	1.00
wprime.wz.m1500	2.00	1.00
afii.kkg.lvjj.m500	2.00	1.00
afii.kkg.lvjj.m600	2.00	1.00
afii.kkg.lvjj.m700	2.00	1.00
afii.kkg.lvjj.m800	2.00	1.00
afii.kkg.lvjj.m900	2.00	1.00
afii.kkg.lvjj.m1000	2.00	1.00
afii.kkg.lvjj.m1100	2.00	1.00
afii.kkg.lvjj.m1200	2.00	1.00
afii.kkg.lvjj.m1300	2.00	1.00
afii.kkg.lvjj.m1400	2.00	1.00
afii.kkg.lvjj.m1500	2.00	1.00

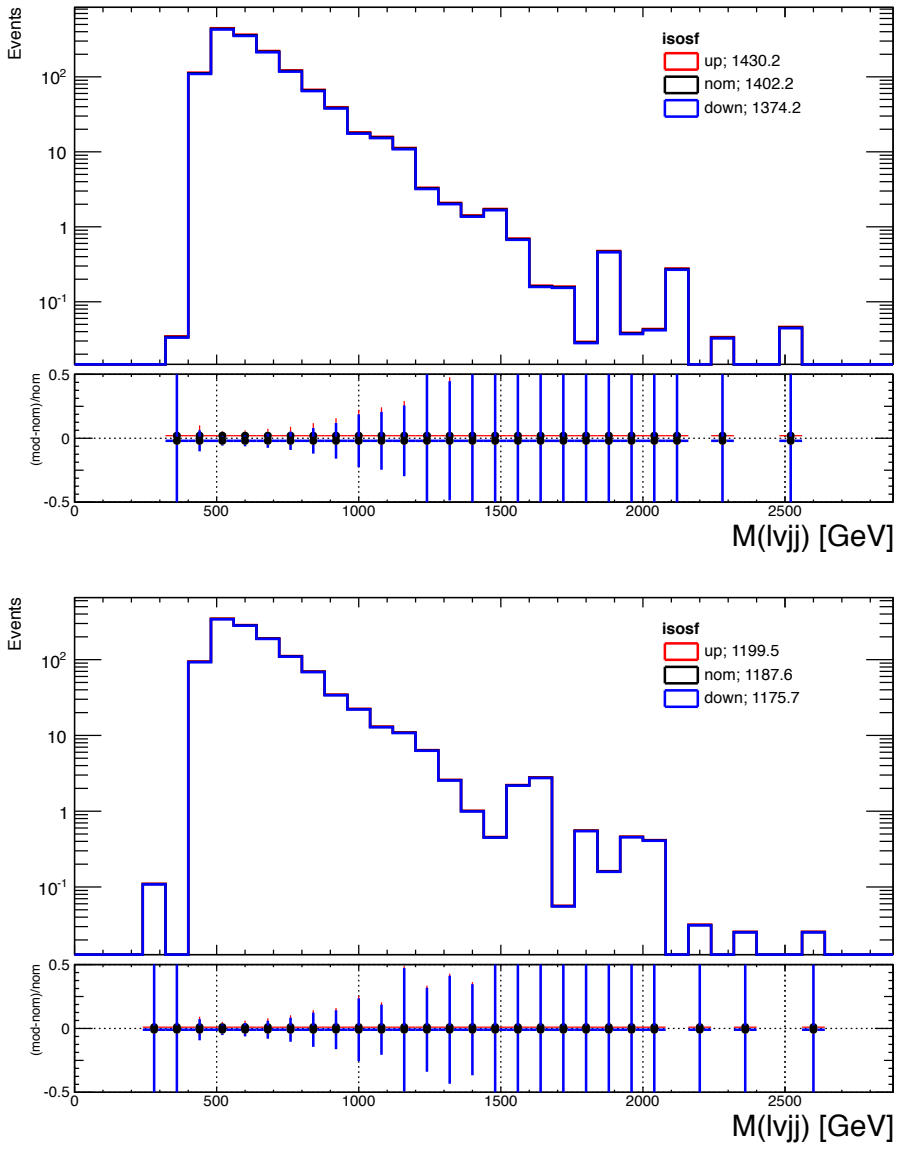

Figure 1: Transverse mass of the system for electron (top) and muon (bottom) channels

Table 1: Lepton reconstruction scale factor, fractional Δ Acceptance in High Mass control region

samples	**enujj**	**munujj**
herwig.ww	0.84	0.39
herwig.wz	0.83	0.39
herwig.zz	0.72	0.38
herwig.vv	0.83	0.39
mcatnlo.ttbar	0.88	0.37
mcatnlo.top	0.88	0.37
mcatnlo.singletop	0.88	0.38
alpgen.wjets	0.81	0.39
alpgen.zjets	0.83	0.41
qcd.alpgen	-	-
rsg.m500.kmpl0_1	0.90	0.36
rsg.m750.kmpl0_1	0.89	0.39
rsg.m1000.kmpl0_1	0.85	0.41
rsg.m1250.kmpl0_1	0.80	0.43
rsg.m1500.kmpl0_1	0.75	0.45
wprime.wz.m500	0.85	0.37
wprime.wz.m600	0.86	0.39
wprime.wz.m700	0.86	0.39
wprime.wz.m800	0.89	0.40
wprime.wz.m900	0.89	0.41
wprime.wz.m1000	0.87	0.42
wprime.wz.m1100	0.87	0.43
wprime.wz.m1200	0.86	0.44
wprime.wz.m1300	0.86	0.44
wprime.wz.m1400	0.81	0.46
wprime.wz.m1500	0.82	0.46
afii.kkg.lvjj.m500	0.89	0.36
afii.kkg.lvjj.m600	0.91	0.37
afii.kkg.lvjj.m700	0.91	0.39
afii.kkg.lvjj.m800	0.91	0.39
afii.kkg.lvjj.m900	0.89	0.40
afii.kkg.lvjj.m1000	0.90	0.41
afii.kkg.lvjj.m1100	0.88	0.42
afii.kkg.lvjj.m1200	0.87	0.42
afii.kkg.lvjj.m1300	0.88	0.43
afii.kkg.lvjj.m1400	0.88	0.43
afii.kkg.lvjj.m1500	0.89	0.43

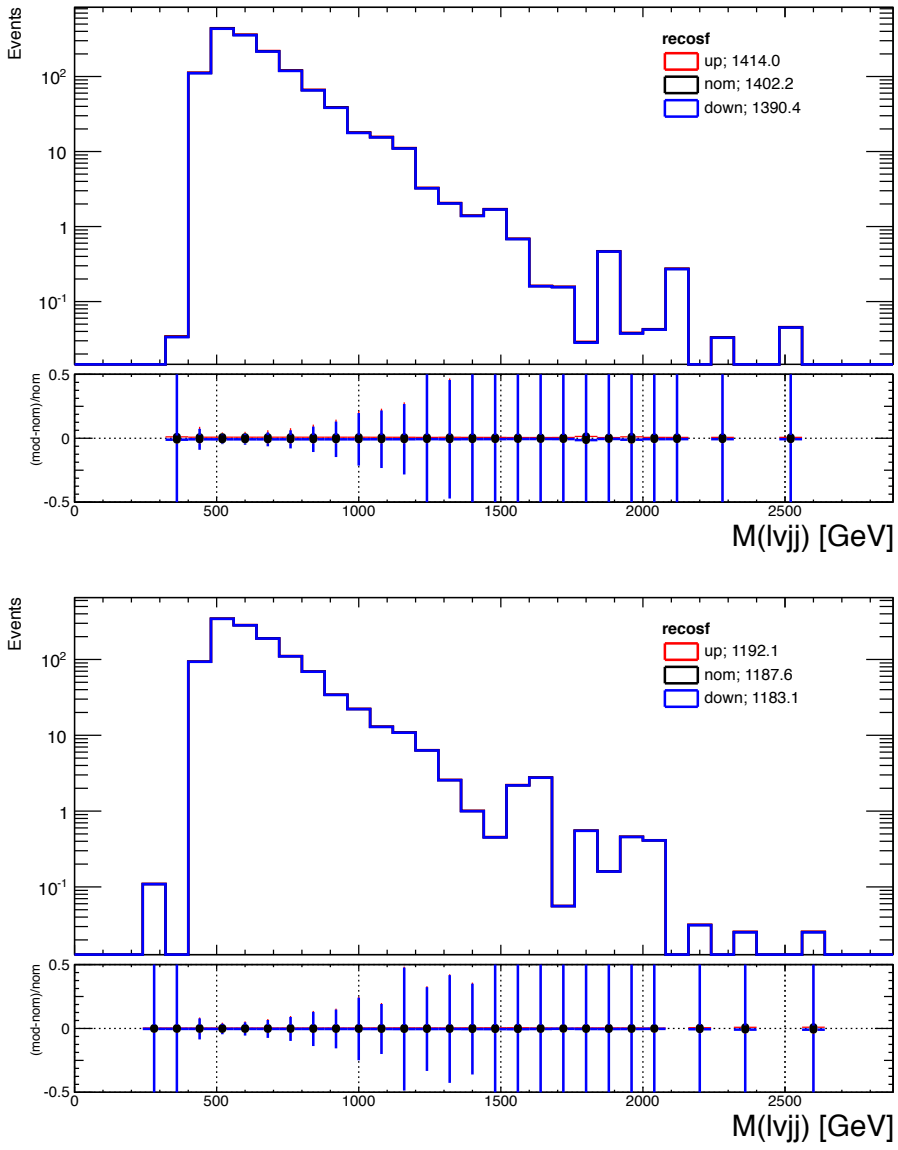

Figure 1: Transverse mass of the system for electron (top) and muon (bottom) channels

Table 1: Lepton trigger scale factor, fractional Δ Acceptance in High Mass control region

samples	**enujj**	**munujj**
herwig.ww	0.56	1.72
herwig.wz	0.55	1.70
herwig.zz	0.65	1.79
herwig.vv	0.56	1.71
mcatnlo.ttbar	0.56	1.74
mcatnlo.top	0.56	1.74
mcatnlo.singletop	0.56	1.73
alpgen.wjets	0.56	1.71
alpgen.zjets	0.53	1.75
qcd.alpgen	-	-
rsg.m500.kmpl0_1	0.55	1.74
rsg.m750.kmpl0_1	0.56	1.72
rsg.m1000.kmpl0_1	0.56	1.73
rsg.m1250.kmpl0_1	0.56	1.71
rsg.m1500.kmpl0_1	0.56	1.71
wprime.wz.m500	0.56	1.72
wprime.wz.m600	0.56	1.72
wprime.wz.m700	0.56	1.73
wprime.wz.m800	0.56	1.75
wprime.wz.m900	0.56	1.73
wprime.wz.m1000	0.56	1.75
wprime.wz.m1100	0.55	1.73
wprime.wz.m1200	0.56	1.73
wprime.wz.m1300	0.56	1.71
wprime.wz.m1400	0.55	1.74
wprime.wz.m1500	0.55	1.68
afii.kkg.lvjj.m500	0.56	1.74
afii.kkg.lvjj.m600	0.56	1.75
afii.kkg.lvjj.m700	0.55	1.74
afii.kkg.lvjj.m800	0.56	1.74
afii.kkg.lvjj.m900	0.56	1.75
afii.kkg.lvjj.m1000	0.56	1.78
afii.kkg.lvjj.m1100	0.56	1.76
afii.kkg.lvjj.m1200	0.57	1.73
afii.kkg.lvjj.m1300	0.55	1.73
afii.kkg.lvjj.m1400	0.53	1.71
afii.kkg.lvjj.m1500	0.55	1.71

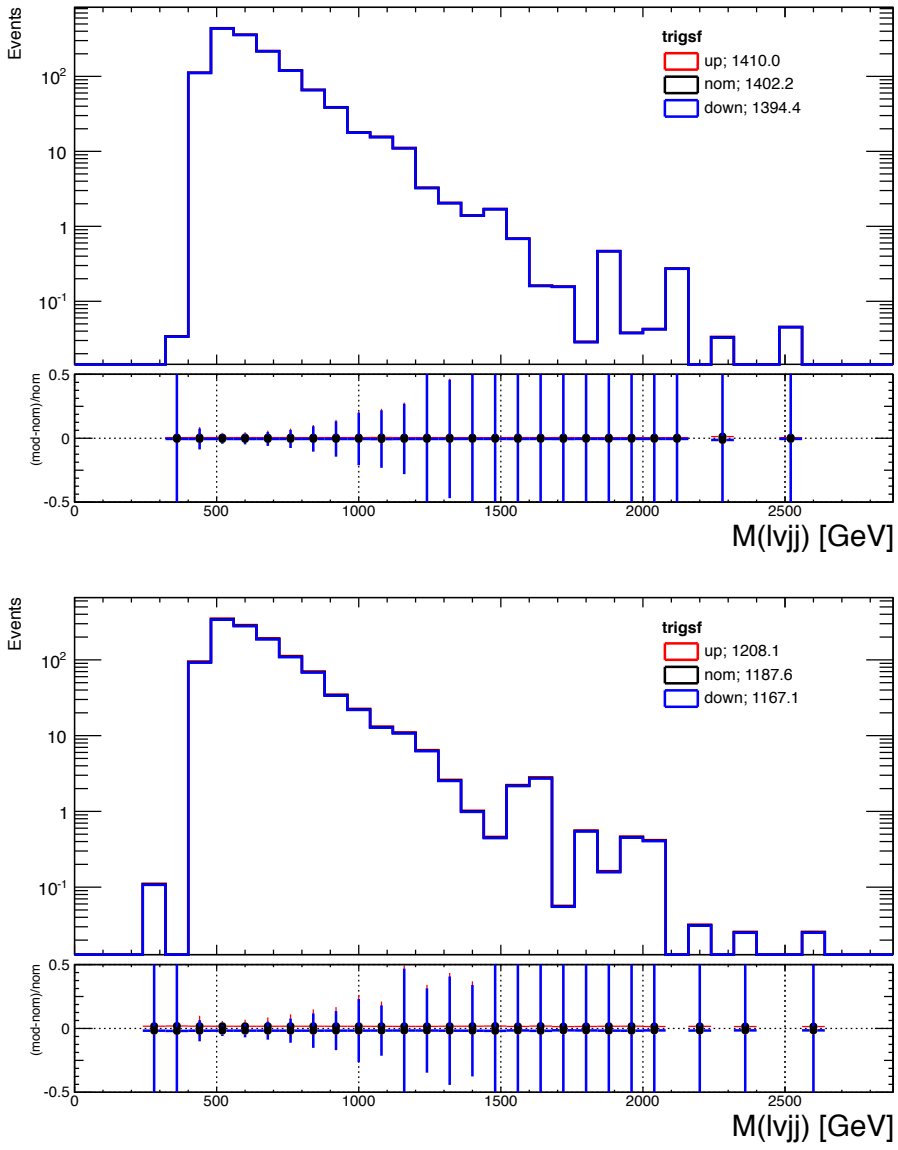

Figure 1: Transverse mass of the system for electron (top) and muon (bottom) channels

Table 1: All Clusters fractional Δ acceptance in signal region

samples	**enujj**	**munujj**
herwig.ww	0.47	0.57
herwig.wz	1.10	0.99
herwig.zz	3.49	4.32
herwig.vv	0.62	0.69
mcatnlo.ttbar	0.91	0.42
mcatnlo.top	0.94	0.44
mcatnlo.singletop	1.25	0.64
alpgen.wjets	0.51	0.29
alpgen.zjets	1.56	0.49
qcd.alpgen	-	-
rsg.m500.kmpl0_1	1.06	1.28
rsg.m750.kmpl0_1	0.17	0.22
rsg.m1000.kmpl0_1	0.06	0.52
rsg.m1250.kmpl0_1	0.12	0.45
rsg.m1500.kmpl0_1	0.28	0.17
wprime.wz.m500	1.46	0.88
wprime.wz.m600	0.30	0.11
wprime.wz.m700	0.17	0.21
wprime.wz.m800	0.11	0.07
wprime.wz.m900	0.03	0.04
wprime.wz.m1000	0.08	0.19
wprime.wz.m1100	0.14	0.36
wprime.wz.m1200	0.06	0.36
wprime.wz.m1300	0.00	0.33
wprime.wz.m1400	0.14	0.97
wprime.wz.m1500	0.00	0.16
afii.kkg.lvjj.m500	1.44	0.90
afii.kkg.lvjj.m600	0.13	0.45
afii.kkg.lvjj.m700	0.10	0.06
afii.kkg.lvjj.m800	0.06	0.20
afii.kkg.lvjj.m900	0.07	0.08
afii.kkg.lvjj.m1000	0.00	0.29
afii.kkg.lvjj.m1100	0.19	0.23
afii.kkg.lvjj.m1200	0.00	0.28
afii.kkg.lvjj.m1300	0.39	0.73
afii.kkg.lvjj.m1400	0.26	1.19
afii.kkg.lvjj.m1500	0.29	0.51

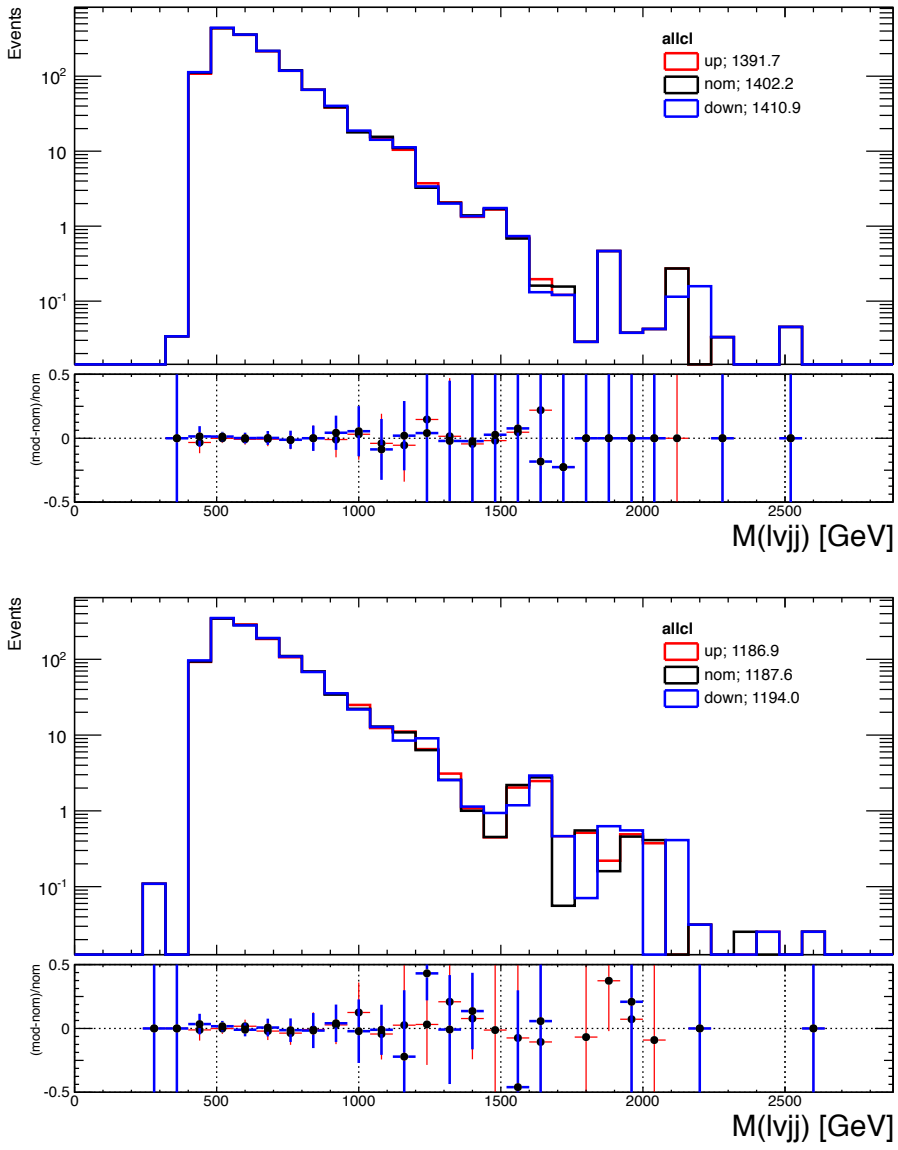

Figure 1: Transverse mass of the system for electron (top) and muon (bottom) channels

Table 1: MET pileup fractional Δ acceptance in signal region

samples	**enujj**	**munujj**
herwig.ww	0.47	0.48
herwig.wz	1.19	0.92
herwig.zz	3.49	4.32
herwig.vv	0.64	0.61
mcatnlo.ttbar	0.78	0.43
mcatnlo.top	0.78	0.47
mcatnlo.singletop	0.85	0.72
alpgen.wjets	0.45	0.12
alpgen.zjets	2.13	0.84
qcd.alpgen	-	-
rsg.m500.kmpl0_1	0.96	1.11
rsg.m750.kmpl0_1	0.14	0.21
rsg.m1000.kmpl0_1	0.07	0.47
rsg.m1250.kmpl0_1	0.12	0.46
rsg.m1500.kmpl0_1	0.28	0.16
wprime.wz.m500	1.22	0.89
wprime.wz.m600	0.24	0.11
wprime.wz.m700	0.23	0.16
wprime.wz.m800	0.11	0.07
wprime.wz.m900	0.03	0.04
wprime.wz.m1000	0.08	0.19
wprime.wz.m1100	0.14	0.49
wprime.wz.m1200	0.06	0.36
wprime.wz.m1300	0.00	0.33
wprime.wz.m1400	0.14	0.84
wprime.wz.m1500	0.00	0.16
afii.kkg.lvjj.m500	1.35	0.83
afii.kkg.lvjj.m600	0.13	0.38
afii.kkg.lvjj.m700	0.03	0.07
afii.kkg.lvjj.m800	0.06	0.20
afii.kkg.lvjj.m900	0.07	0.08
afii.kkg.lvjj.m1000	0.00	0.29
afii.kkg.lvjj.m1100	0.19	0.31
afii.kkg.lvjj.m1200	0.00	0.28
afii.kkg.lvjj.m1300	0.39	0.53
afii.kkg.lvjj.m1400	0.00	1.19
afii.kkg.lvjj.m1500	0.29	0.51

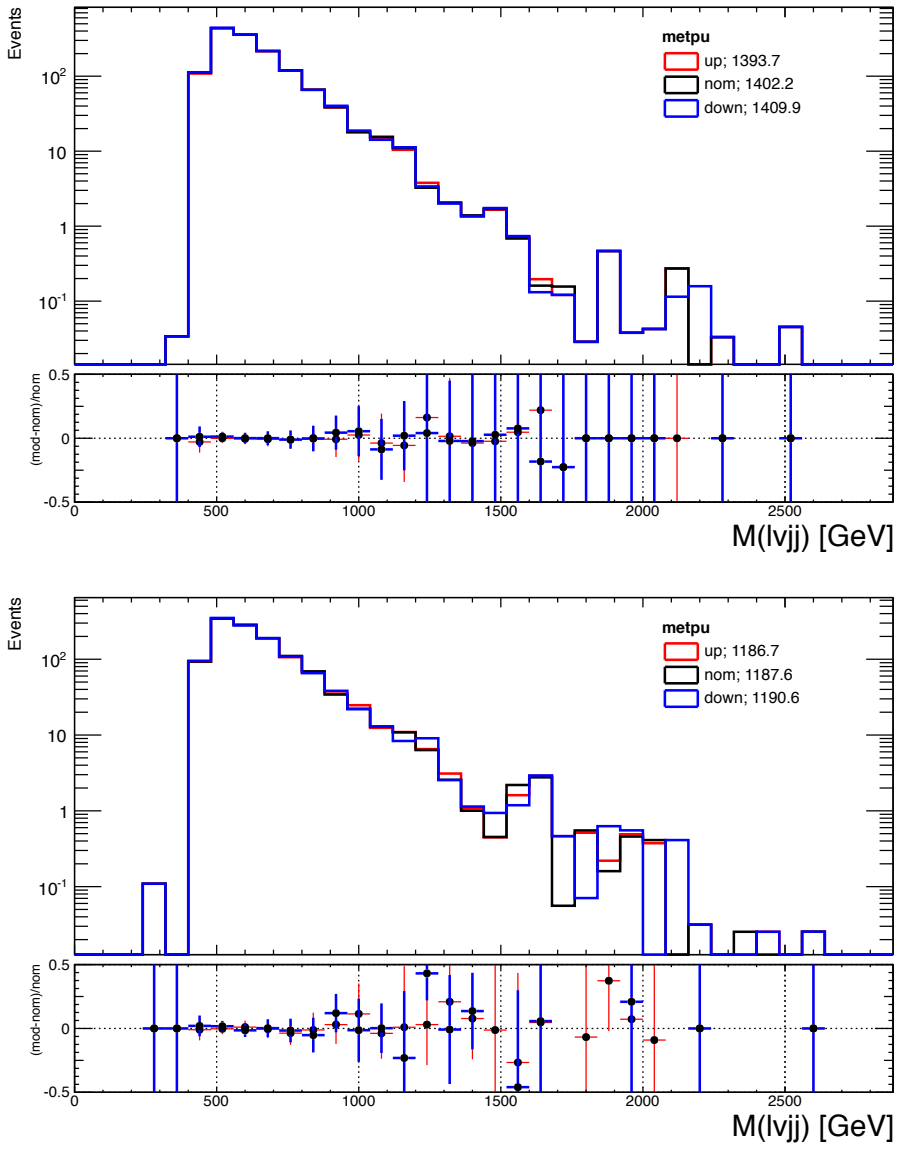

Figure 1: Transverse mass of the system for electron (top) and muon (bottom) channels

Table 1: V+jets fractional Δ acceptance in signal region

samples	**enujj**	**munujj**
herwig.ww	0.00	0.00
herwig.wz	0.00	0.00
herwig.zz	0.00	0.00
herwig.vv	0.00	0.00
mcatnlo.ttbar	0.00	0.00
mcatnlo.top	0.00	0.00
mcatnlo.singletop	0.00	0.00
alpgen.wjets	2.46	2.42
alpgen.zjets	2.58	2.40
qcd.alpgen	-	-
rsg.m500.kmpl0_1	0.00	0.00
rsg.m750.kmpl0_1	0.00	0.00
rsg.m1000.kmpl0_1	0.00	0.00
rsg.m1250.kmpl0_1	0.00	0.00
rsg.m1500.kmpl0_1	0.00	0.00
wprime.wz.m500	0.00	0.00
wprime.wz.m600	0.00	0.00
wprime.wz.m700	0.00	0.00
wprime.wz.m800	0.00	0.00
wprime.wz.m900	0.00	0.00
wprime.wz.m1000	0.00	0.00
wprime.wz.m1100	0.00	0.00
wprime.wz.m1200	0.00	0.00
wprime.wz.m1300	0.00	0.00
wprime.wz.m1400	0.00	0.00
wprime.wz.m1500	0.00	0.00
afii.kkg.lvjj.m500	0.00	0.00
afii.kkg.lvjj.m600	0.00	0.00
afii.kkg.lvjj.m700	0.00	0.00
afii.kkg.lvjj.m800	0.00	0.00
afii.kkg.lvjj.m900	0.00	0.00
afii.kkg.lvjj.m1000	0.00	0.00
afii.kkg.lvjj.m1100	0.00	0.00
afii.kkg.lvjj.m1200	0.00	0.00
afii.kkg.lvjj.m1300	0.00	0.00
afii.kkg.lvjj.m1400	0.00	0.00
afii.kkg.lvjj.m1500	0.00	0.00

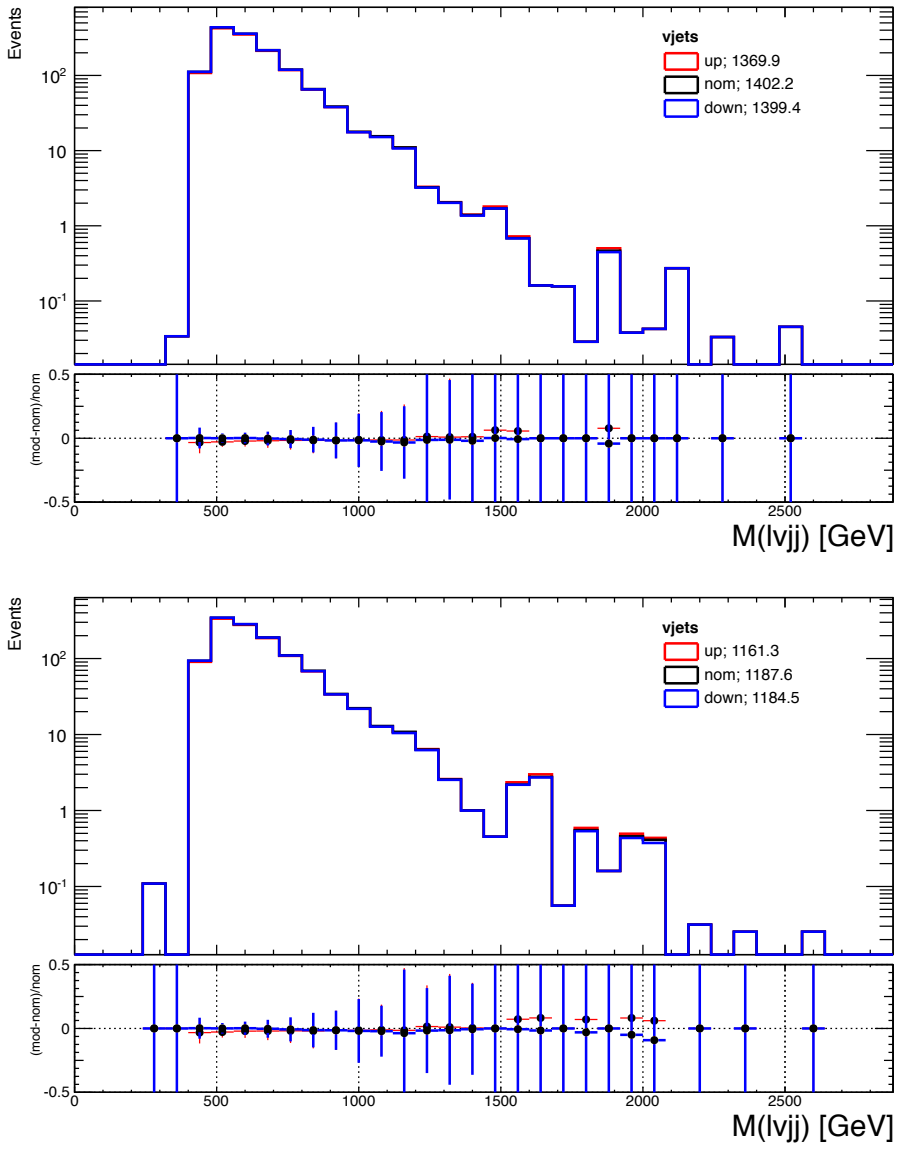

Figure 1: Transverse mass of the system for electron (top) and muon (bottom) channels