ATLAS NOTE

March 11, 2014

Tables from HistFitter for WHSS

The ATLAS collaboration

EE 1 Jet (cutflow)

	ee	$\mu\mu$	$e\mu$	Total
Fake leptons	$2.93 \pm 0.51\ ^{+2.14}_{-0.77}$	$-0.02 \pm 0.12\ ^{+0.07}_{-0.10}$	$1.58 \pm 0.38\ ^{+1.52}_{-0.40}$	$4.49 \pm 0.65\ ^{+3.66}_{-1.17}$
ZV	$2.19 \pm 0.41\ ^{+0.29}_{-0.22}$	$3.89 \pm 0.54\ ^{+0.36}_{-0.12}$	$2.17 \pm 0.38\ ^{+0.12}_{-0.41}$	$8.24 \pm 0.77\ ^{+0.38}_{-0.31}$
WW	$0.39 \pm 0.04\ ^{+0.04}_{-0.03}$	$0.27 \pm 0.04\ ^{+0.06}_{-0.01}$	$0.30 \pm 0.03\ ^{+0.03}_{-0.02}$	$0.96 \pm 0.07\ ^{+0.11}_{-0.05}$
Top	$0.13 \pm 0.01\ ^{+0.03}_{-0.03}$	$0.01 \pm 0.01\ ^{+0.00}_{-0.00}$	$0.07 \pm 0.01\ ^{+0.02}_{-0.02}$	$0.21 \pm 0.02\ ^{+0.05}_{-0.05}$
Z+jets	$0.07 \pm 0.03\ ^{+0.18}_{-0.01}$	$0.00 \pm 0.00\ ^{+0.00}_{-0.00}$	$0.00 \pm 0.00\ ^{+0.00}_{-0.00}$	$0.07 \pm 0.03\ ^{+0.18}_{-0.01}$
SM Higgs	$0.00 \pm 0.00\ ^{+0.00}_{-0.00}$	$0.13 \pm 0.05\ ^{+0.00}_{-0.00}$	$0.07 \pm 0.03\ ^{+0.00}_{-0.00}$	$0.20 \pm 0.06\ ^{+0.01}_{-0.01}$
Total	$5.71 \pm 0.65\ ^{+2.19}_{-0.80}$	$4.28 \pm 0.56\ ^{+0.41}_{-0.14}$	$4.18 \pm 0.54\ ^{+1.53}_{-0.56}$	$14.17 \pm 1.01\ ^{+3.71}_{-1.22}$
Data				

Table 1: Background estimate for SRSS1j

EE 1 Jet (HistFitter)

table.results.yields channel	eeSR1jet
Observed events	5
Fitted bkg events	5.52 ± 1.34
Fitted Fakes events	2.85 ± 1.29
Fitted ZV events	2.09 ± 0.53
Fitted WW events	0.39 ± 0.04
Fitted Top events	0.13 ± 0.01
Fitted Zjets events	0.07 ± 0.03
Fitted Higgs events	0.00 ± 0.00
Fitted DiscoveryMode_SIG events	0.00 ± 0.00
MC exp. SM events	5.53 ± 1.61
MC exp. Fakes events	2.85 ± 1.52
MC exp. ZV events	2.09 ± 0.54
MC exp. WW events	0.39 ± 0.04
MC exp. Top events	0.13 ± 0.01
MC exp. Zjets events	0.07 ± 0.03
MC exp. Higgs events	0.00 ± 0.00
MC exp. DiscoveryMode_SIG events	0.00 ± 0.00

Table 1: Fit results for an integrated luminosity of 20.3 fb^{-1}. The results are obtained using the discovery fit (see text for details). Nominal MC expectations (normalised to MC cross-sections) are given for comparison. The errors shown are the statistical plus systematic uncertainties, except for the error on the background estimate in the signal region, which is the systematic uncertainty only. Uncertainties on the fitted yields are symmetric by construction, where the negative error is truncated when reaching to zero event yield.

MM 1 Jet (HistFitter)

	ee	$\mu\mu$	$e\mu$	Total
Fake leptons	$2.93 \pm 0.51\ ^{+2.14}_{-0.77}$	$-0.02 \pm 0.12\ ^{+0.07}_{-0.10}$	$1.58 \pm 0.38\ ^{+1.52}_{-0.40}$	$4.49 \pm 0.65\ ^{+3.66}_{-1.17}$
ZV	$2.19 \pm 0.41\ ^{+0.29}_{-0.22}$	$3.89 \pm 0.54\ ^{+0.36}_{-0.12}$	$2.17 \pm 0.38\ ^{+0.12}_{-0.41}$	$8.24 \pm 0.77\ ^{+0.38}_{-0.31}$
WW	$0.39 \pm 0.04\ ^{+0.04}_{-0.03}$	$0.27 \pm 0.04\ ^{+0.06}_{-0.01}$	$0.30 \pm 0.03\ ^{+0.03}_{-0.02}$	$0.96 \pm 0.07\ ^{+0.11}_{-0.05}$
Top	$0.13 \pm 0.01\ ^{+0.03}_{-0.03}$	$0.01 \pm 0.01\ ^{+0.00}_{-0.00}$	$0.07 \pm 0.01\ ^{+0.02}_{-0.02}$	$0.21 \pm 0.02\ ^{+0.05}_{-0.05}$
Z+jets	$0.07 \pm 0.03\ ^{+0.18}_{-0.01}$	$0.00 \pm 0.00\ ^{+0.00}_{-0.00}$	$0.00 \pm 0.00\ ^{+0.00}_{-0.00}$	$0.07 \pm 0.03\ ^{+0.18}_{-0.01}$
SM Higgs	$0.00 \pm 0.00\ ^{+0.00}_{-0.00}$	$0.13 \pm 0.05\ ^{+0.00}_{-0.00}$	$0.07 \pm 0.03\ ^{+0.00}_{-0.00}$	$0.20 \pm 0.06\ ^{+0.01}_{-0.01}$
Total	$5.71 \pm 0.65\ ^{+2.19}_{-0.80}$	$4.28 \pm 0.56\ ^{+0.41}_{-0.14}$	$4.18 \pm 0.54\ ^{+1.53}_{-0.56}$	$14.17 \pm 1.01\ ^{+3.71}_{-1.22}$
Data				

Table 1: Background estimate for SRSS1j

MM 1 Jet (cutflow)

table.results.yields channel	mmSR1jet
Observed events	4
Fitted bkg events	4.25 ± 0.79
Fitted Fakes events	0.00 ± 0.00
Fitted ZV events	3.85 ± 0.79
Fitted WW events	0.27 ± 0.05
Fitted Top events	$0.00^{+0.01}_{-0.00}$
Fitted Zjets events	0.00 ± 0.00
Fitted Higgs events	0.13 ± 0.05
Fitted DiscoveryMode_SIG events	0.00 ± 0.00
MC exp. SM events	4.26 ± 0.87
MC exp. Fakes events	0.00 ± 0.00
MC exp. ZV events	3.85 ± 0.86
MC exp. WW events	0.27 ± 0.05
MC exp. Top events	0.01 ± 0.01
MC exp. Zjets events	0.00 ± 0.00
MC exp. Higgs events	0.13 ± 0.05
MC exp. DiscoveryMode_SIG events	0.00 ± 0.00

Table 2: Fit results for an integrated luminosity of 20.3 fb^{-1}. The results are obtained using the discovery fit (see text for details). Nominal MC expectations (normalised to MC cross-sections) are given for comparison. The errors shown are the statistical plus systematic uncertainties, except for the error on the background estimate in the signal region, which is the systematic uncertainty only. Uncertainties on the fitted yields are symmetric by construction, where the negative error is truncated when reaching to zero event yield.

EM 1 Jet (cutflow)

	ee	$\mu\mu$	$e\mu$	Total
Fake leptons	$2.93 \pm 0.51\ ^{+2.14}_{-0.77}$	$-0.02 \pm 0.12\ ^{+0.07}_{-0.10}$	$1.58 \pm 0.38\ ^{+1.52}_{-0.40}$	$4.49 \pm 0.65\ ^{+3.66}_{-1.17}$
ZV	$2.19 \pm 0.41\ ^{+0.29}_{-0.22}$	$3.89 \pm 0.54\ ^{+0.36}_{-0.12}$	$2.17 \pm 0.38\ ^{+0.12}_{-0.41}$	$8.24 \pm 0.77\ ^{+0.38}_{-0.31}$
WW	$0.39 \pm 0.04\ ^{+0.04}_{-0.03}$	$0.27 \pm 0.04\ ^{+0.06}_{-0.01}$	$0.30 \pm 0.03\ ^{+0.03}_{-0.02}$	$0.96 \pm 0.07\ ^{+0.11}_{-0.05}$
Top	$0.13 \pm 0.01\ ^{+0.03}_{-0.03}$	$0.01 \pm 0.01\ ^{+0.00}_{-0.00}$	$0.07 \pm 0.01\ ^{+0.02}_{-0.02}$	$0.21 \pm 0.02\ ^{+0.05}_{-0.05}$
Z+jets	$0.07 \pm 0.03\ ^{+0.18}_{-0.01}$	$0.00 \pm 0.00\ ^{+0.00}_{-0.00}$	$0.00 \pm 0.00\ ^{+0.00}_{-0.00}$	$0.07 \pm 0.03\ ^{+0.18}_{-0.01}$
SM Higgs	$0.00 \pm 0.00\ ^{+0.00}_{-0.00}$	$0.13 \pm 0.05\ ^{+0.00}_{-0.00}$	$0.07 \pm 0.03\ ^{+0.00}_{-0.00}$	$0.20 \pm 0.06\ ^{+0.01}_{-0.01}$
Total	$5.71 \pm 0.65\ ^{+2.19}_{-0.80}$	$4.28 \pm 0.56\ ^{+0.41}_{-0.14}$	$4.18 \pm 0.54\ ^{+1.53}_{-0.56}$	$14.17 \pm 1.01\ ^{+3.71}_{-1.22}$
Data				

Table 1: Background estimate for SRSS1j

EM 1 Jet (HistFitter)

table.results.yields channel	emSR1jet
Observed events	4
Fitted bkg events	4.11 ± 0.98
Fitted Fakes events	1.48 ± 0.88
Fitted ZV events	2.18 ± 0.52
Fitted WW events	0.30 ± 0.04
Fitted Top events	0.08 ± 0.01
Fitted Zjets events	0.00 ± 0.00
Fitted Higgs events	0.07 ± 0.04
Fitted DiscoveryMode_SIG events	0.00 ± 0.00
MC exp. SM events	4.12 ± 1.11
MC exp. Fakes events	1.48 ± 0.97
MC exp. ZV events	2.18 ± 0.54
MC exp. WW events	0.30 ± 0.04
MC exp. Top events	0.08 ± 0.01
MC exp. Zjets events	0.00 ± 0.00
MC exp. Higgs events	0.07 ± 0.04
MC exp. DiscoveryMode_SIG events	0.00 ± 0.00

Table 3: Fit results for an integrated luminosity of 20.3 fb^{-1}. The results are obtained using the discovery fit (see text for details). Nominal MC expectations (normalised to MC cross-sections) are given for comparison. The errors shown are the statistical plus systematic uncertainties, except for the error on the background estimate in the signal region, which is the systematic uncertainty only. Uncertainties on the fitted yields are symmetric by construction, where the negative error is truncated when reaching to zero event yield.

EE 2, 3 Jet (cutflow)

	ee	$\mu\mu$	$e\mu$	Total
Fake leptons	$1.93 \pm 0.42\ ^{+1.22}_{-0.52}$	$0.00 \pm 0.14\ ^{+0.05}_{-0.07}$	$0.24 \pm 0.19\ ^{+0.03}_{-0.10}$	$2.17 \pm 0.48\ ^{+1.25}_{-0.62}$
ZV	$0.73 \pm 0.22\ ^{+0.16}_{-0.32}$	$1.61 \pm 0.35\ ^{+0.07}_{-0.33}$	$1.05 \pm 0.25\ ^{+0.14}_{-0.18}$	$3.39 \pm 0.48\ ^{+0.24}_{-0.72}$
WW	$0.34 \pm 0.05\ ^{+0.05}_{-0.03}$	$0.40 \pm 0.06\ ^{+0.02}_{-0.02}$	$0.21 \pm 0.03\ ^{+0.02}_{-0.03}$	$0.95 \pm 0.08\ ^{+0.06}_{-0.08}$
Top	$0.07 \pm 0.01\ ^{+0.03}_{-0.02}$	$0.02 \pm 0.01\ ^{+0.00}_{-0.01}$	$0.06 \pm 0.01\ ^{+0.02}_{-0.02}$	$0.14 \pm 0.02\ ^{+0.05}_{-0.04}$
Z+jets	$0.60 \pm 0.17\ ^{+0.08}_{-0.32}$	$0.00 \pm 0.00\ ^{+0.00}_{-0.00}$	$0.00 \pm 0.00\ ^{+0.00}_{-0.00}$	$0.60 \pm 0.17\ ^{+0.08}_{-0.32}$
SM Higgs	$0.04 \pm 0.03\ ^{+0.00}_{-0.00}$	$0.04 \pm 0.02\ ^{+0.00}_{-0.00}$	$0.02 \pm 0.02\ ^{+0.00}_{-0.00}$	$0.10 \pm 0.04\ ^{+0.01}_{-0.00}$
Total	$3.71 \pm 0.51\ ^{+1.24}_{-0.78}$	$2.07 \pm 0.38\ ^{+0.10}_{-0.36}$	$1.57 \pm 0.31\ ^{+0.15}_{-0.23}$	$7.35 \pm 0.71\ ^{+1.29}_{-1.19}$
Data				

Table 2: Background estimate for SRSS23j

EE 2, 3 Jet (HistFitter)

table.results.yields channel	eeSR23jets
Observed events	3
Fitted bkg events	3.53 ± 0.89
Fitted Fakes events	1.84 ± 0.84
Fitted ZV events	0.66 ± 0.31
Fitted WW events	0.34 ± 0.06
Fitted Top events	0.08 ± 0.01
Fitted Zjets events	0.57 ± 0.17
Fitted Higgs events	0.04 ± 0.03
Fitted DiscoveryMode_SIG events	0.00 ± 0.00
MC exp. SM events	3.54 ± 1.01
MC exp. Fakes events	1.84 ± 0.94
MC exp. ZV events	0.66 ± 0.31
MC exp. WW events	0.34 ± 0.06
MC exp. Top events	0.08 ± 0.01
MC exp. Zjets events	0.57 ± 0.17
MC exp. Higgs events	0.04 ± 0.03
MC exp. DiscoveryMode_SIG events	0.00 ± 0.00

Table 4: Fit results for an integrated luminosity of 20.3 fb^{-1}. The results are obtained using the discovery fit (see text for details). Nominal MC expectations (normalised to MC cross-sections) are given for comparison. The errors shown are the statistical plus systematic uncertainties, except for the error on the background estimate in the signal region, which is the systematic uncertainty only. Uncertainties on the fitted yields are symmetric by construction, where the negative error is truncated when reaching to zero event yield.

MM 2, 3 Jet (cutflow)

	ee	$\mu\mu$	$e\mu$	Total
Fake leptons	$1.93 \pm 0.42\ ^{+1.22}_{-0.52}$	$0.00 \pm 0.14\ ^{+0.05}_{-0.07}$	$0.24 \pm 0.19\ ^{+0.03}_{-0.10}$	$2.17 \pm 0.48\ ^{+1.25}_{-0.62}$
ZV	$0.73 \pm 0.22\ ^{+0.16}_{-0.32}$	$1.61 \pm 0.35\ ^{+0.07}_{-0.33}$	$1.05 \pm 0.25\ ^{+0.14}_{-0.18}$	$3.39 \pm 0.48\ ^{+0.24}_{-0.72}$
WW	$0.34 \pm 0.05\ ^{+0.05}_{-0.03}$	$0.40 \pm 0.06\ ^{+0.02}_{-0.02}$	$0.21 \pm 0.03\ ^{+0.02}_{-0.03}$	$0.95 \pm 0.08\ ^{+0.06}_{-0.08}$
Top	$0.07 \pm 0.01\ ^{+0.03}_{-0.02}$	$0.02 \pm 0.01\ ^{+0.00}_{-0.01}$	$0.06 \pm 0.01\ ^{+0.02}_{-0.02}$	$0.14 \pm 0.02\ ^{+0.05}_{-0.04}$
Z+jets	$0.60 \pm 0.17\ ^{+0.08}_{-0.32}$	$0.00 \pm 0.00\ ^{+0.00}_{-0.00}$	$0.00 \pm 0.00\ ^{+0.00}_{-0.00}$	$0.60 \pm 0.17\ ^{+0.08}_{-0.32}$
SM Higgs	$0.04 \pm 0.03\ ^{+0.00}_{-0.00}$	$0.04 \pm 0.02\ ^{+0.00}_{-0.00}$	$0.02 \pm 0.02\ ^{+0.00}_{-0.00}$	$0.10 \pm 0.04\ ^{+0.01}_{-0.00}$
Total	$3.71 \pm 0.51\ ^{+1.24}_{-0.78}$	$2.07 \pm 0.38\ ^{+0.10}_{-0.36}$	$1.57 \pm 0.31\ ^{+0.15}_{-0.23}$	$7.35 \pm 0.71\ ^{+1.29}_{-1.19}$
Data				

Table 2: Background estimate for SRSS23j

MM 2, 3 Jet (HistFitter)

table.results.yields channel	mmSR23jets
Observed events	1
Fitted bkg events	1.98 ± 0.61
Fitted Fakes events	0.00 ± 0.23
Fitted ZV events	1.53 ± 0.57
Fitted WW events	0.40 ± 0.06
Fitted Top events	0.02 ± 0.01
Fitted Zjets events	0.00 ± 0.00
Fitted Higgs events	0.03 ± 0.03
Fitted DiscoveryMode_SIG events	0.00 ± 0.00
MC exp. SM events	1.99 ± 0.64
MC exp. Fakes events	$0.00^{+0.08}_{-0.00}$
MC exp. ZV events	1.53 ± 0.63
MC exp. WW events	0.40 ± 0.06
MC exp. Top events	0.02 ± 0.01
MC exp. Zjets events	0.00 ± 0.00
MC exp. Higgs events	0.04 ± 0.02
MC exp. DiscoveryMode_SIG events	0.00 ± 0.00

Table 5: Fit results for an integrated luminosity of 20.3 fb^{-1}. The results are obtained using the discovery fit (see text for details). Nominal MC expectations (normalised to MC cross-sections) are given for comparison. The errors shown are the statistical plus systematic uncertainties, except for the error on the background estimate in the signal region, which is the systematic uncertainty only. Uncertainties on the fitted yields are symmetric by construction, where the negative error is truncated when reaching to zero event yield.

EM 2, 3 Jet (cutflow)

	ee	$\mu\mu$	$e\mu$	Total
Fake leptons	$1.93 \pm 0.42\ ^{+1.22}_{-0.52}$	$0.00 \pm 0.14\ ^{+0.05}_{-0.07}$	$0.24 \pm 0.19\ ^{+0.03}_{-0.10}$	$2.17 \pm 0.48\ ^{+1.25}_{-0.62}$
ZV	$0.73 \pm 0.22\ ^{+0.16}_{-0.32}$	$1.61 \pm 0.35\ ^{+0.07}_{-0.33}$	$1.05 \pm 0.25\ ^{+0.14}_{-0.18}$	$3.39 \pm 0.48\ ^{+0.24}_{-0.72}$
WW	$0.34 \pm 0.05\ ^{+0.05}_{-0.03}$	$0.40 \pm 0.06\ ^{+0.02}_{-0.02}$	$0.21 \pm 0.03\ ^{+0.02}_{-0.03}$	$0.95 \pm 0.08\ ^{+0.06}_{-0.08}$
Top	$0.07 \pm 0.01\ ^{+0.03}_{-0.02}$	$0.02 \pm 0.01\ ^{+0.00}_{-0.01}$	$0.06 \pm 0.01\ ^{+0.02}_{-0.02}$	$0.14 \pm 0.02\ ^{+0.05}_{-0.04}$
Z+jets	$0.60 \pm 0.17\ ^{+0.08}_{-0.32}$	$0.00 \pm 0.00\ ^{+0.00}_{-0.00}$	$0.00 \pm 0.00\ ^{+0.00}_{-0.00}$	$0.60 \pm 0.17\ ^{+0.08}_{-0.32}$
SM Higgs	$0.04 \pm 0.03\ ^{+0.00}_{-0.00}$	$0.04 \pm 0.02\ ^{+0.00}_{-0.00}$	$0.02 \pm 0.02\ ^{+0.00}_{-0.00}$	$0.10 \pm 0.04\ ^{+0.01}_{-0.00}$
Total	$3.71 \pm 0.51\ ^{+1.24}_{-0.78}$	$2.07 \pm 0.38\ ^{+0.10}_{-0.36}$	$1.57 \pm 0.31\ ^{+0.15}_{-0.23}$	$7.35 \pm 0.71\ ^{+1.29}_{-1.19}$
Data				

Table 2: Background estimate for SRSS23j

EM 2, 3 Jet (HistFitter)

table.results.yields channel	emSR23jets
Observed events	1
Fitted bkg events	1.42 ± 0.43
Fitted Fakes events	$0.10^{+0.15}_{-0.10}$
Fitted ZV events	1.05 ± 0.41
Fitted WW events	0.21 ± 0.04
Fitted Top events	0.06 ± 0.01
Fitted Zjets events	0.00 ± 0.00
Fitted Higgs events	$0.01^{+0.02}_{-0.01}$
Fitted DiscoveryMode_SIG events	0.00 ± 0.00
MC exp. SM events	1.51 ± 0.47
MC exp. Fakes events	$0.17^{+0.17}_{-0.17}$
MC exp. ZV events	1.05 ± 0.44
MC exp. WW events	0.21 ± 0.04
MC exp. Top events	0.06 ± 0.01
MC exp. Zjets events	0.00 ± 0.00
MC exp. Higgs events	0.02 ± 0.02
MC exp. DiscoveryMode_SIG events	0.00 ± 0.00

Table 6: Fit results for an integrated luminosity of 20.3 fb^{-1}. The results are obtained using the discovery fit (see text for details). Nominal MC expectations (normalised to MC cross-sections) are given for comparison. The errors shown are the statistical plus systematic uncertainties, except for the error on the background estimate in the signal region, which is the systematic uncertainty only. Uncertainties on the fitted yields are symmetric by construction, where the negative error is truncated when reaching to zero event yield.