

$H \rightarrow W W + 2 \text{ jets}$ Analysis



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of
WISCONSIN
MADISON

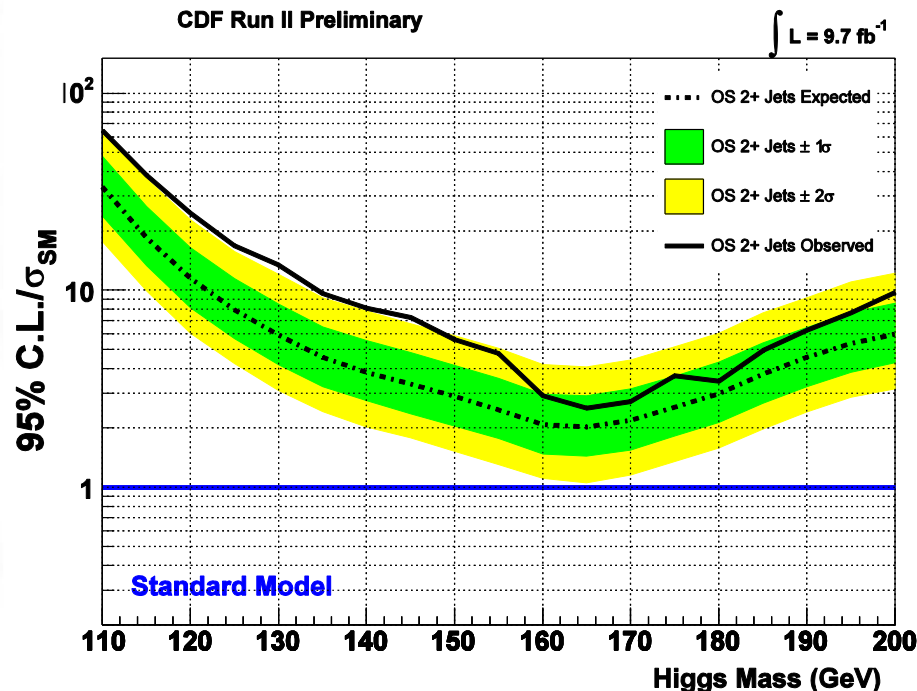


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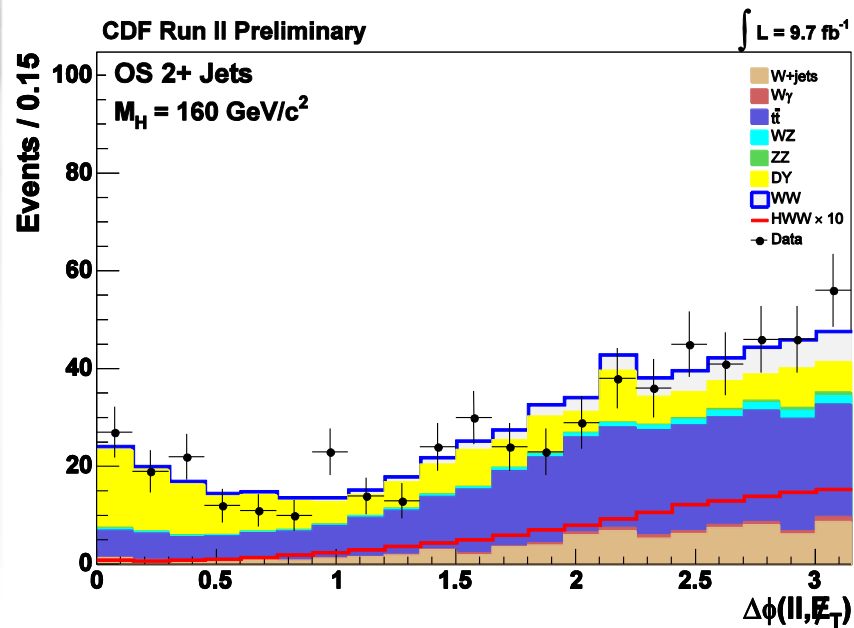
Results



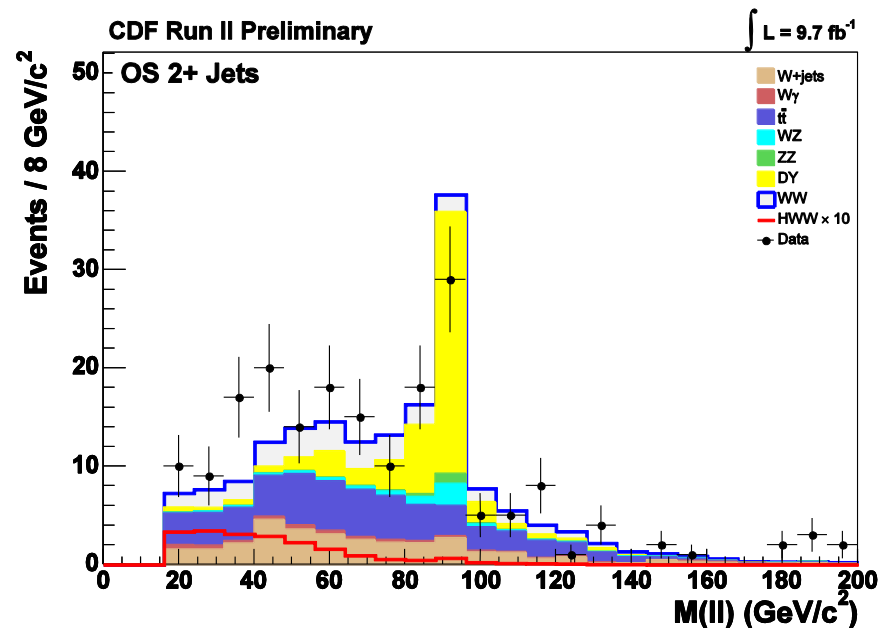
OS 2+ Jets	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200
$-2\sigma/\sigma_{SM}$	17.62	9.93	6.03	4.24	3.10	2.41	2.02	1.78	1.52	1.30	1.11	1.05	1.15	1.35	1.58	1.97	2.41	2.86	3.16
$-1\sigma/\sigma_{SM}$	23.69	13.35	8.15	5.68	4.19	3.23	2.75	2.36	2.05	1.77	1.47	1.44	1.54	1.82	2.13	2.67	3.23	3.82	4.29
Median/ σ_{SM}	33.38	18.44	11.51	7.96	5.91	4.56	3.83	3.34	2.90	2.47	2.07	2.02	2.18	2.55	2.98	3.76	4.55	5.36	5.97
$+1\sigma/\sigma_{SM}$	47.72	26.54	16.42	11.43	8.50	6.51	5.55	4.82	4.17	3.57	2.97	2.90	3.16	3.67	4.30	5.41	6.46	7.73	8.59
$+2\sigma/\sigma_{SM}$	65.63	36.76	22.75	15.69	12.02	9.13	7.84	6.75	5.88	5.07	4.20	4.08	4.43	5.14	6.03	7.70	9.12	11.02	12.23
Observed/ σ_{SM}	64.69	38.46	24.57	16.78	13.42	9.62	8.11	7.29	5.61	4.76	2.90	2.52	2.72	3.68	3.45	4.96	6.26	7.68	9.78

- Compare at 125 GeV to 8.36 expected, 21.17 observed limit in previous analysis (with full statistics)
- Improvement across all mass points but 110(expected) and 145(observed)

New WW Cuts



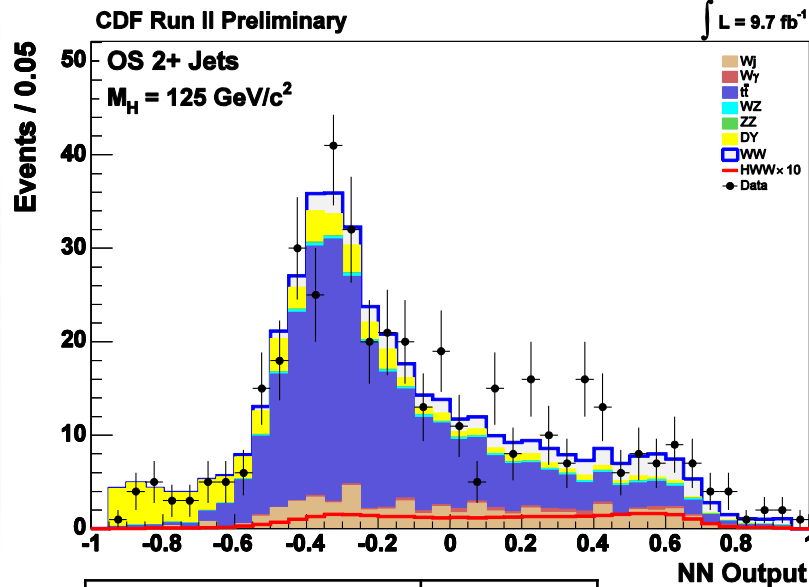
Cut at 1 to remove $t\bar{t}$



Cut from 80 to 99 GeV unless
e-mu to remove ee and mumu

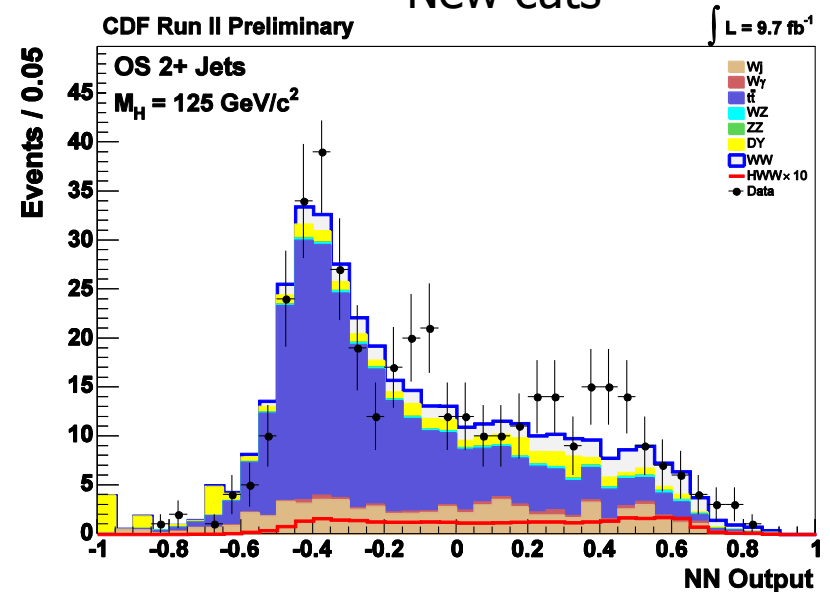
WW Neural Net

Old cuts



W+jets	27.4
Wy	4.3
tt	56.8
WZ	3.2
ZZ	0.4
DY	7.2
Background	99.3
WW	27.4
WW/Total	21.6%

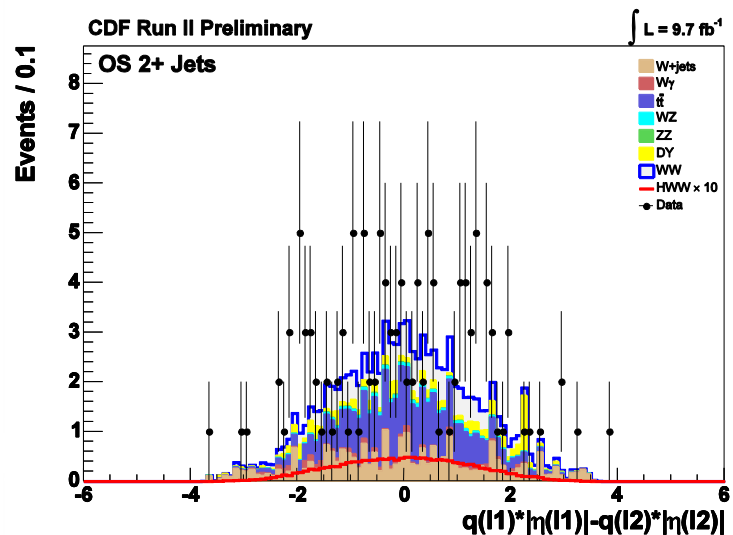
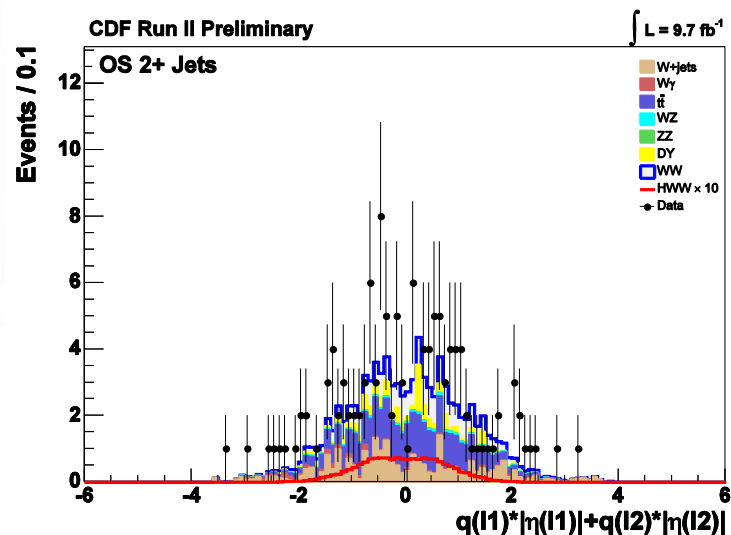
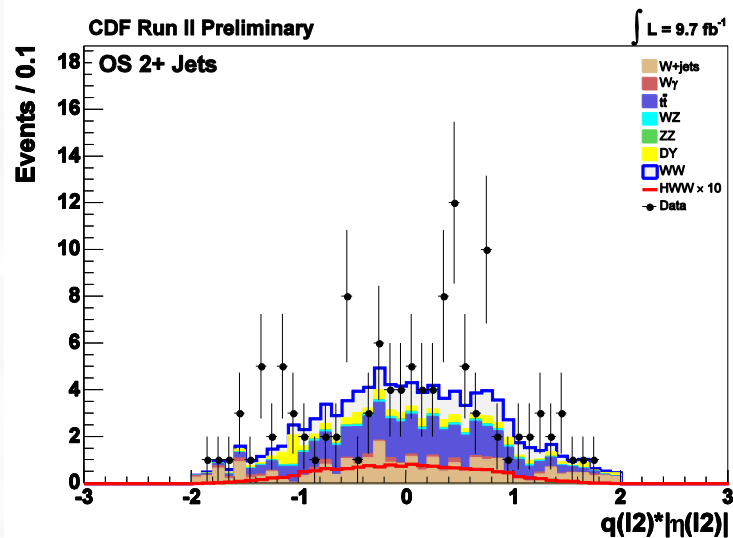
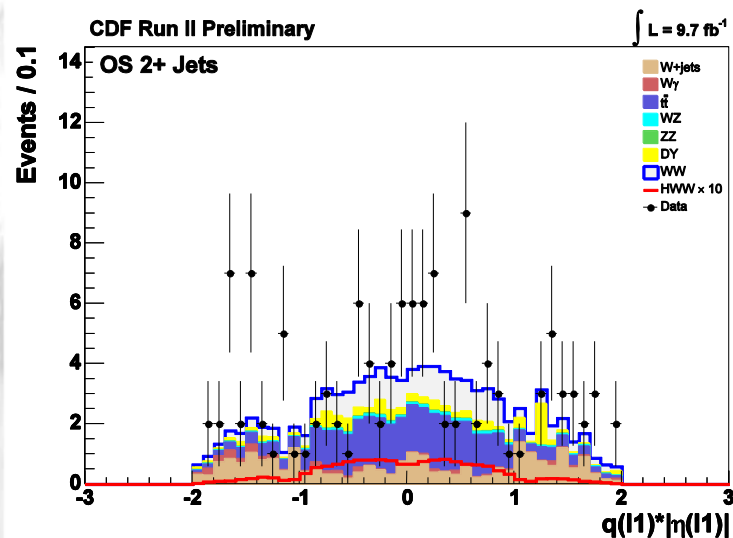
New cuts



W+jets	28.6
Wy	3.8
tt	45.2
WZ	2.6
ZZ	0.7
DY	11.5
Background	92.5
WW	26.7
WW/Total	22.4

Minimal difference,
should revisit after
implementing HOBIT

WW Asymmetry



- Homer sees discrepancy in W+jets forward-backward asymmetry
- Statistics too poor to see here, could revisit after implementing HOBIT