W W + 2 jets Analysis

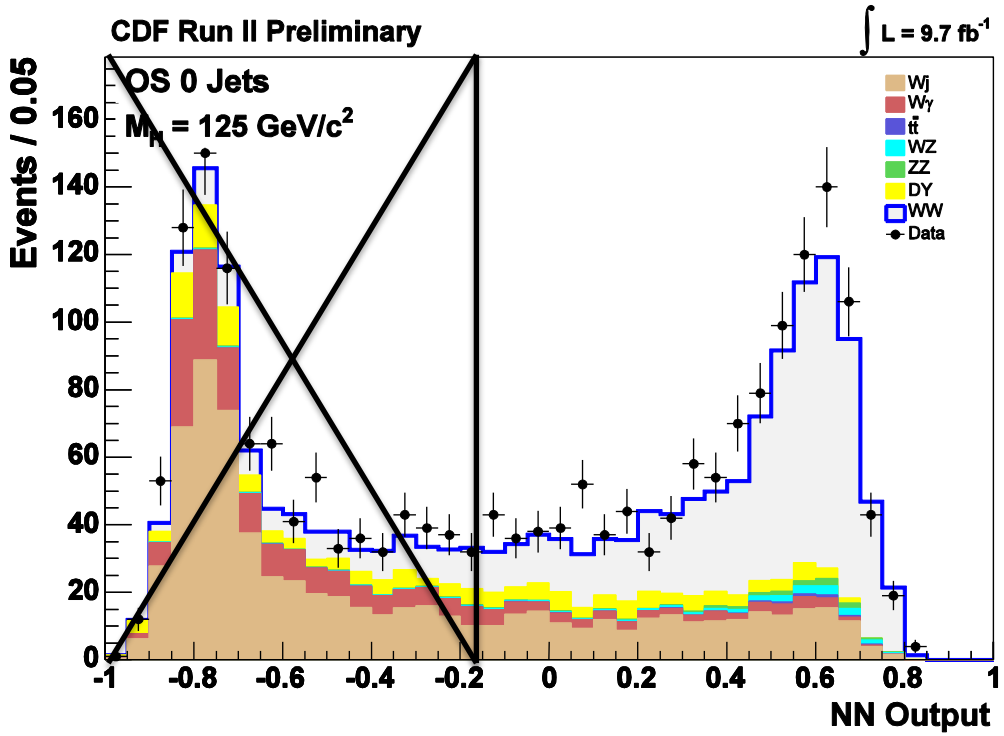
THE UNIVERSITY of WISCONSIN MADISON

Will Parker

University of Wisconsin – Madison

02/25/13

0 Jet NN Output



W+jets	187.8
Wγ	48.5
tt	3.4
WZ	17.9
ZZ	12.1
DY	79.3
Background	349
WW	721.5
S/√(S+B)	22.1

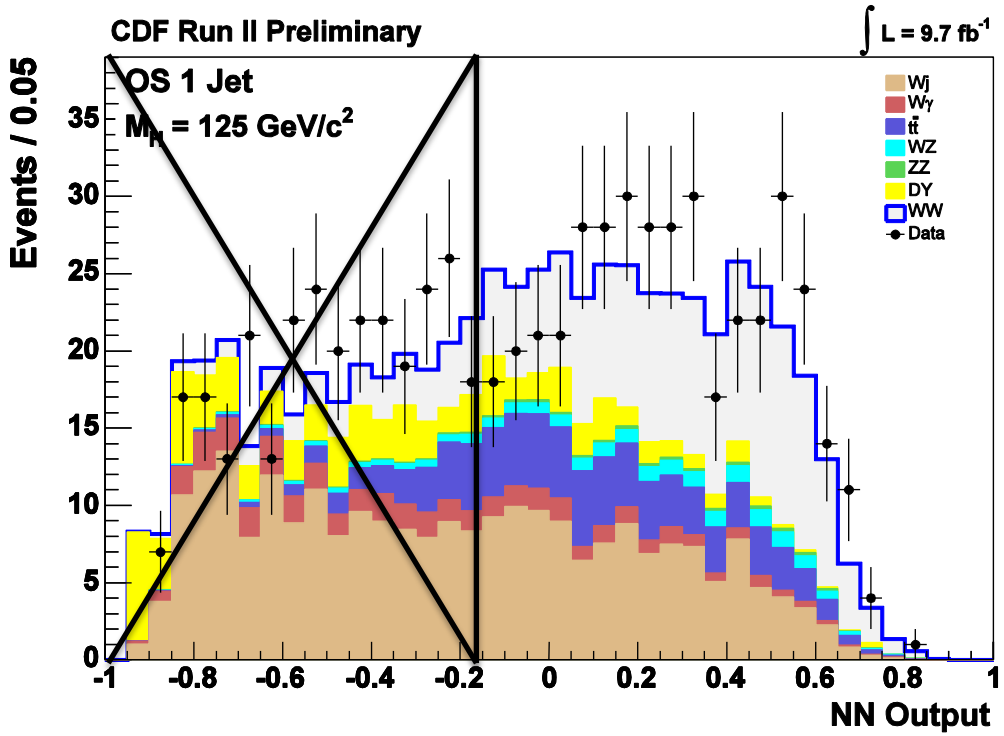
Uncertainty Source	WW	WZ	ZZ	$t\bar{t}$	DY	$W\gamma$	W+jet
Cross Section							
Total	*6.0%*	*6.0%*	*6.0%*	10.0%			
Acceptance							
Scale (jets)	0.3%						
PDF Model (jets)	1.1%						
Higher-order Diagrams		*10.0%*	*10.0%*	10.0%		10.0%	
Jet Energy Scale	*2.6%*	*6.1%*	*3.4%*	*26.0%*	*17.5%*	*3.1%*	
Missing E_T Modeling					19.5%		
$W\gamma$ Modeling						10.0%	
Jet Fake Rates							
(Low S/B)							22.0%
(High S/B)							25.0%
Luminosity	*7.3%*	*7.3%*	*7.3%*	*7.3%*	*7.3%*		

Total MC Uncertainty 92.8

Error: didn't use ME info!

Will send revised today

1 Jet NN Output



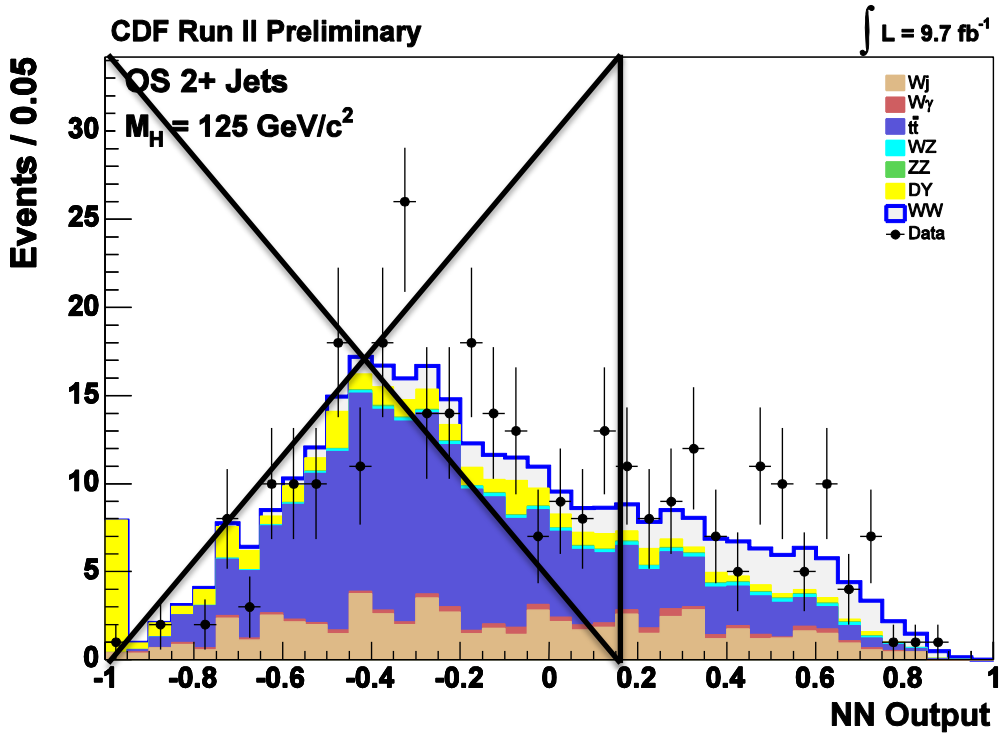
W+jets	99.0
Wγ	17.0
tt	69.2
WZ	15.0
ZZ	3.8
DY	33.5
Background	237.5
WW	178.7
S/√(S+B)	8.8

Uncertainty Source	WW	WZ	ZZ	$t\bar{t}$	DY	$W\gamma$	W+jet
Cross Section							
Total	*6.0%*	*6.0%*	*6.0%*	10.0%			
Acceptance							
Scale (jets)	-4.0%						
PDF Model (jets)	4.7%						
Higher-order Diagrams		*10.0%*	*10.0%*	10.0%		10.0%	
Jet Energy Scale	*-5.5%*	*-1.0%*	*-4.3%*	*-13.0%*	*-6.5%*	*-9.5%*	
Missing E_T Modeling					20.0%		
$W\gamma$ Modeling						10.0%	
Jet Fake Rates							
(Low S/B)							23.0%
(High S/B)							28.0%
Luminosity	*7.3%*	*7.3%*	*7.3%*	*7.3%*	*7.3%*		

Total MC Uncertainty 40.9

Identical to HWW selection and NN, except for DY reduction

2 Jet NN Output

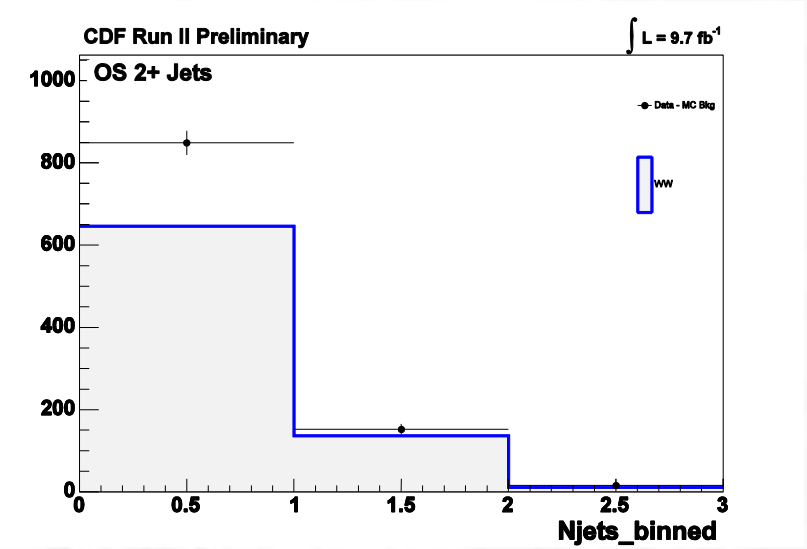


W+jets	23.8
Wγ	3.3
tt	35.2
WZ	2.6
ZZ	0.7
DY	6.5
Background	72.1
WW	28.6
S/√(S+B)	2.8

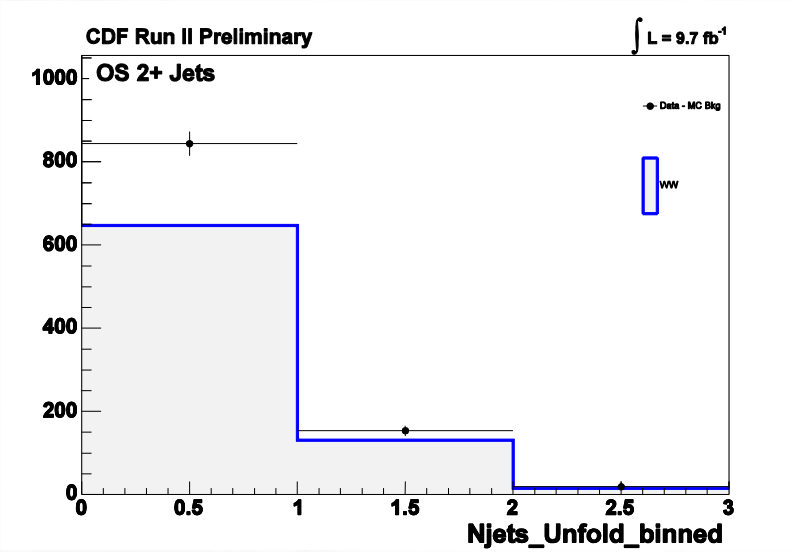
Uncertainty Source	WW	WZ	ZZ	$t\bar{t}$	DY	$W\gamma$	W+jet
Cross Section							
Total	*6.0%*	*6.0%*	*6.0%*	10.0%			
Acceptance							
Scale (jets)	-8.2%						
PDF Model (jets)	4.2%						
Higher-order Diagrams		10.0%	10.0%	10.0%		10.0%	
Jet Energy Scale	*-20.5%*	*-12.9%*	*-12.1%*	*-1.7%*		*-32.7%*	
Missing E_T Modeling					20.0%		
$W\gamma$ Modeling						10.0%	
b-tag Veto				3.2%			
Jet Fake Rates							28.0%
Luminosity	*7.3%*	*7.3%*	*7.3%*	*7.3%*	*7.3%*		

Total MC Uncertainty 12.0

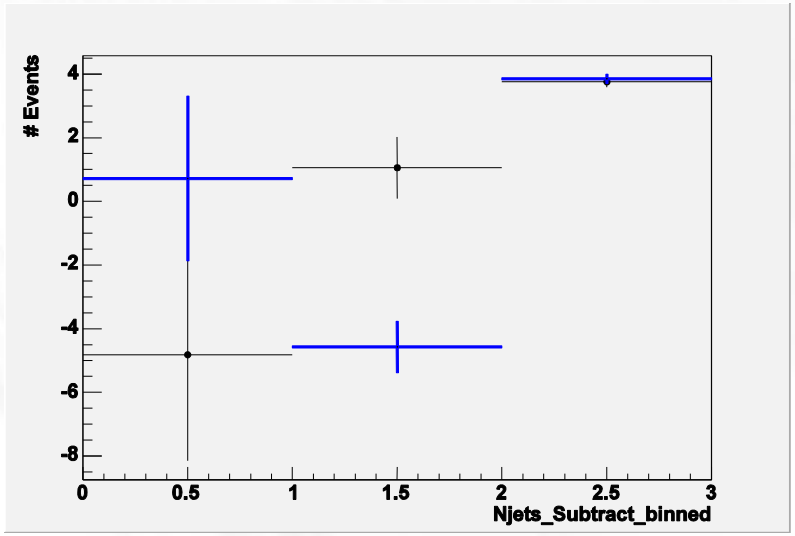
Jet Multiplicity



Initial



Unfolded



Unfolded - Initial

Data – MC Bkg
WW

Just found problem
with leading jet distribution.
Will fix and send around.