ZToLL50- production status

- Recipe: exclusive production + "sm no masses" model – status:

	0 jet	1 jet	2 jet	3 jet	4 jet
Gridpack	Ok	Ok	Ok	Ok	Ok
LHE	Ok	Ok	Ok	Expected number of events is not reached	Running during 1 week. Is it dead?
ROOT	Ok	Ok	Ok	Ok	

Folders:

srm://sbgse1.in2p3.fr:8446/dpm/in2p3.fr/home/cms/Prod_13TeV/Gridpacks/ZToLL50-0Jet_sm-no_masses
srm://sbgse1.in2p3.fr:8446/dpm/in2p3.fr/home/cms/Prod_13TeV/Gridpacks/ZToLL50-1Jet_sm-no_masses
srm://sbgse1.in2p3.fr:8446/dpm/in2p3.fr/home/cms/Prod_13TeV/Gridpacks/ZToLL50-2Jets_sm-no_masses
srm://sbgse1.in2p3.fr:8446/dpm/in2p3.fr/home/cms/Prod_13TeV/Gridpacks/ZToLL50-3Jets_sm-no_masses
srm://sbgse1.in2p3.fr:8446/dpm/in2p3.fr/home/cms/Prod_13TeV/Gridpacks/ZToLL50-4Jets_sm-no_masses

Job 4-jets:

https://sbgwms1.in2p3.fr:9000/lsoAYok_EyG8wRCtUGbG8w

- How to handle 3 jets and 4 jets contribution?

→ try to split the process into several processes. It is known that MG5 has some difficulties to gather several processes into one.

3 jets

```
pp → ll qqq @31
pp → ll gqq @32
pp → ll ggq @33
pp → ll ggg @34
```

4 jets

```
pp → ll qqqq @41
pp → ll gqqq @42
pp → ll ggqq @43
pp → ll gggq @44
pp → ll gggg @45
```

Folders:

srm://sbgse1.in2p3.fr:8446/dpm/in2p3.fr/home/cms/Prod_13TeV/Gridpacks/ZToLL50-3Jets_sm-no_masses_split
srm://sbgse1.in2p3.fr:8446/dpm/in2p3.fr/home/cms/Prod_13TeV/Gridpacks/ZToLL50-4Jets_sm-no_masses_split

Job step2 for 3-jets:

https://sbgwms1.in2p3.fr:9000/miBYpCmktqTlIqrpi8_R4Q

Job step1 for 4-jets:

https://sbgwms1.in2p3.fr:9000/PpZqPHWRR9Ywd8-1GqR3Yq

WToLNu production approval

Status

	0 jet	1 jet	2 jet	3 jet	4 jet
Gridpack	Ok	Ok	Ok	Ok	Ok
LHE	Ok	Ok	Ok	Ok	Ok
ROOT	Ok	Ok	Ok	OK	Ok

An adventure in Time and Space

	0 jet	1 jet	2 jet	3 jet	4 jet
LHE event size	12.92MB	19.19MB	24.67MB	28.91MB	33.11MB
LHE sample time elapsed	13mn	10mn	25mn	16mn	15h20mn
ROOT event size	269.53MB	231.75MB	212.91MB	177.39MB	214.87MB
ROOT sample time elapsed	1h35mn	1h26mn	1h53mn	1h40mn	1h27mn

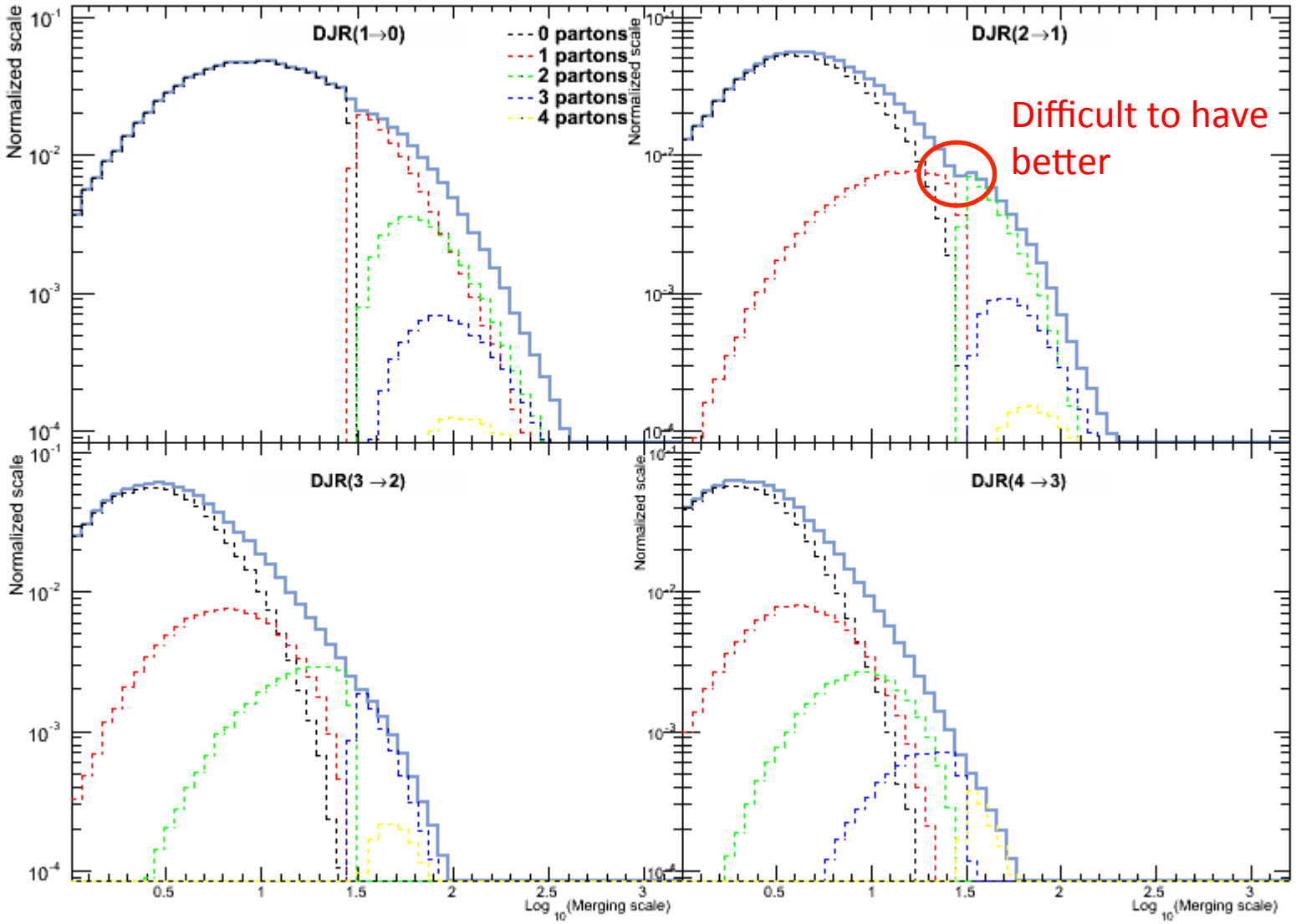
Cross sections and ME/PS merging efficiencies:

48						
49	**matching configuration**					
50	xqcut	25				
51	qcut	30				
52						
53		MG LO xsection [pb] NOT USED	NLO xsection[pb] USED			
54	xsection 0 jet =	5,01E+04	60149	*value missing [Benj] -> replace by LO * 1.2*		
55						
56		MG5 LO xsection [pb]	xsection fraction		Matching efficiency	theoretical number of events to produce	theoretical number of samples to produce
57	0 jet	5,01E+04	72,9%		89,2%	4 917 583 696	49 176
58	1 jet	1,16E+04	16,9%		56,0%	1 819 708 573	18 198
59	2 jet	4,54E+03	6,6%		39,7%	1 001 957 655	10 020
60	3 jet	1,74E+03	2,5%		26,5%	576 088 307	5 761
61	4 jet	6,55E+02	1,0%		24,9%	229 765 887	2 298

Cross sections to use for the analysis:

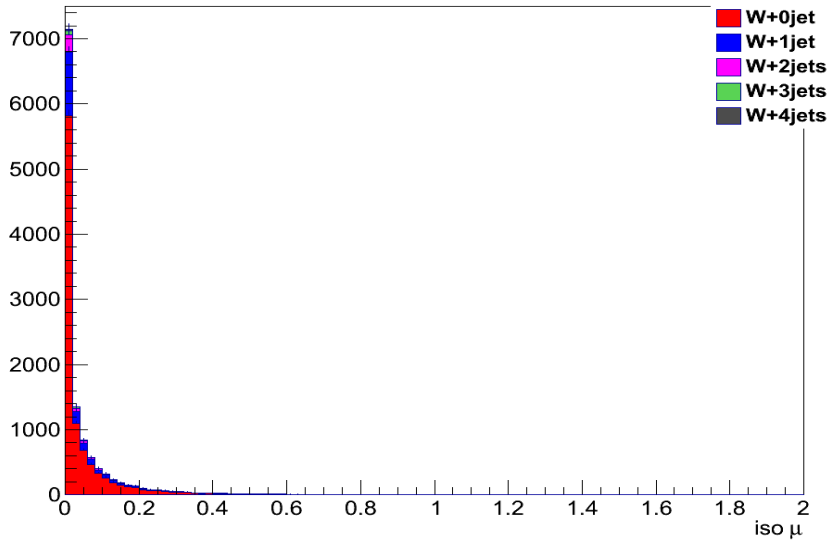
Fraction of each contribution	relative cross section to use in the analysis [pb]
83,3%	50 118
12,2%	7 311
3,4%	2 020
0,9%	518
0,3%	183

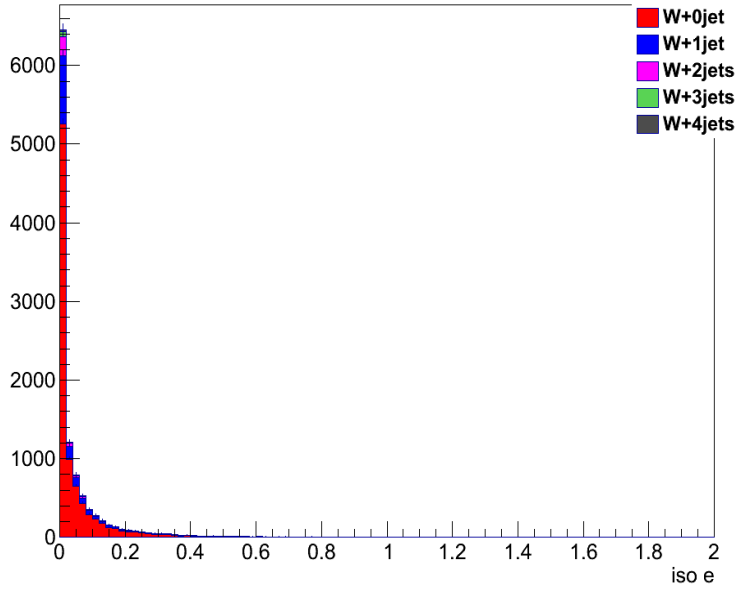
ME/PS merging validation plots



Validation plot @ ROOT level:

Setting used for Lepton isolation : new relIso implemented, need to be checked for fakes.

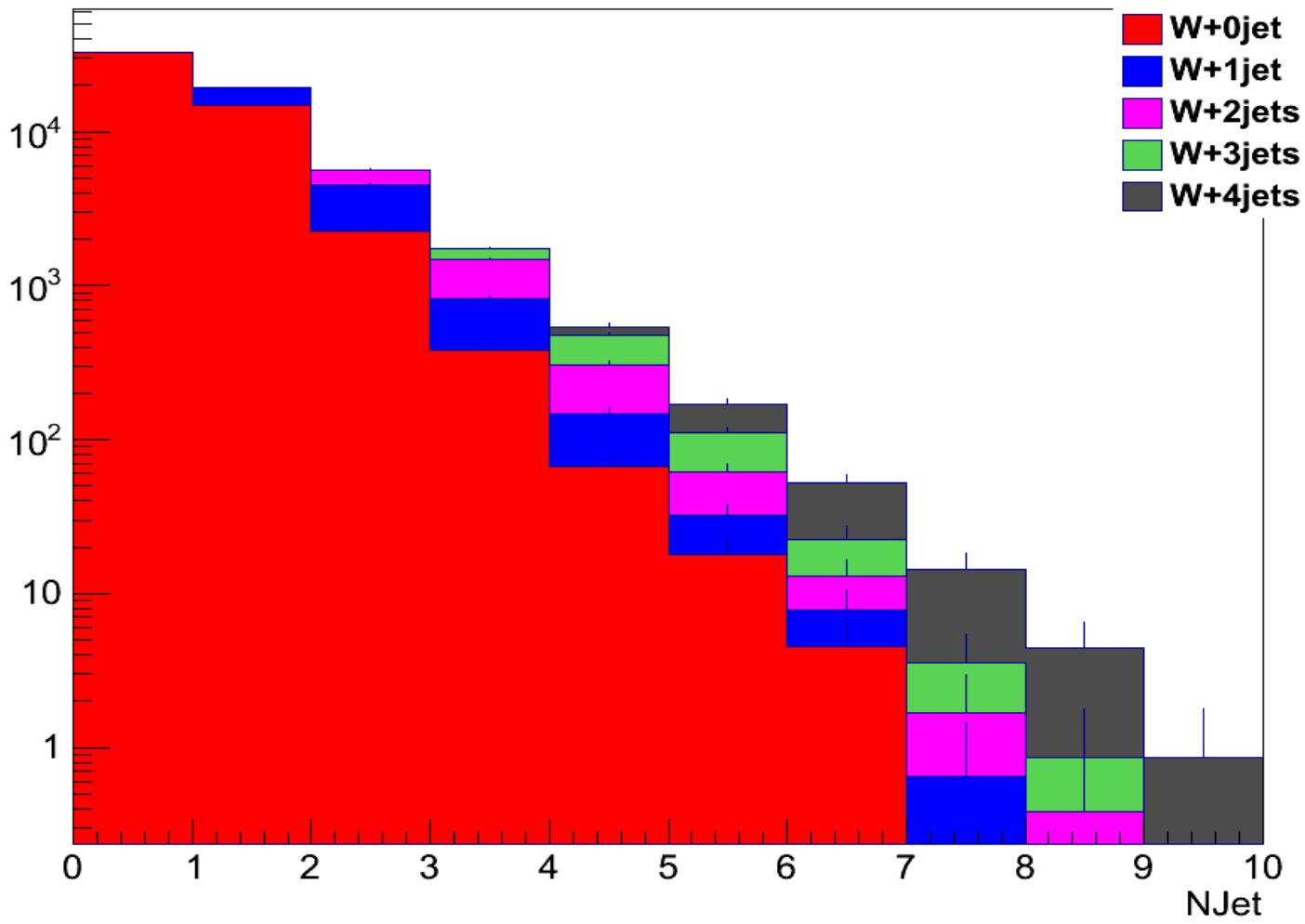




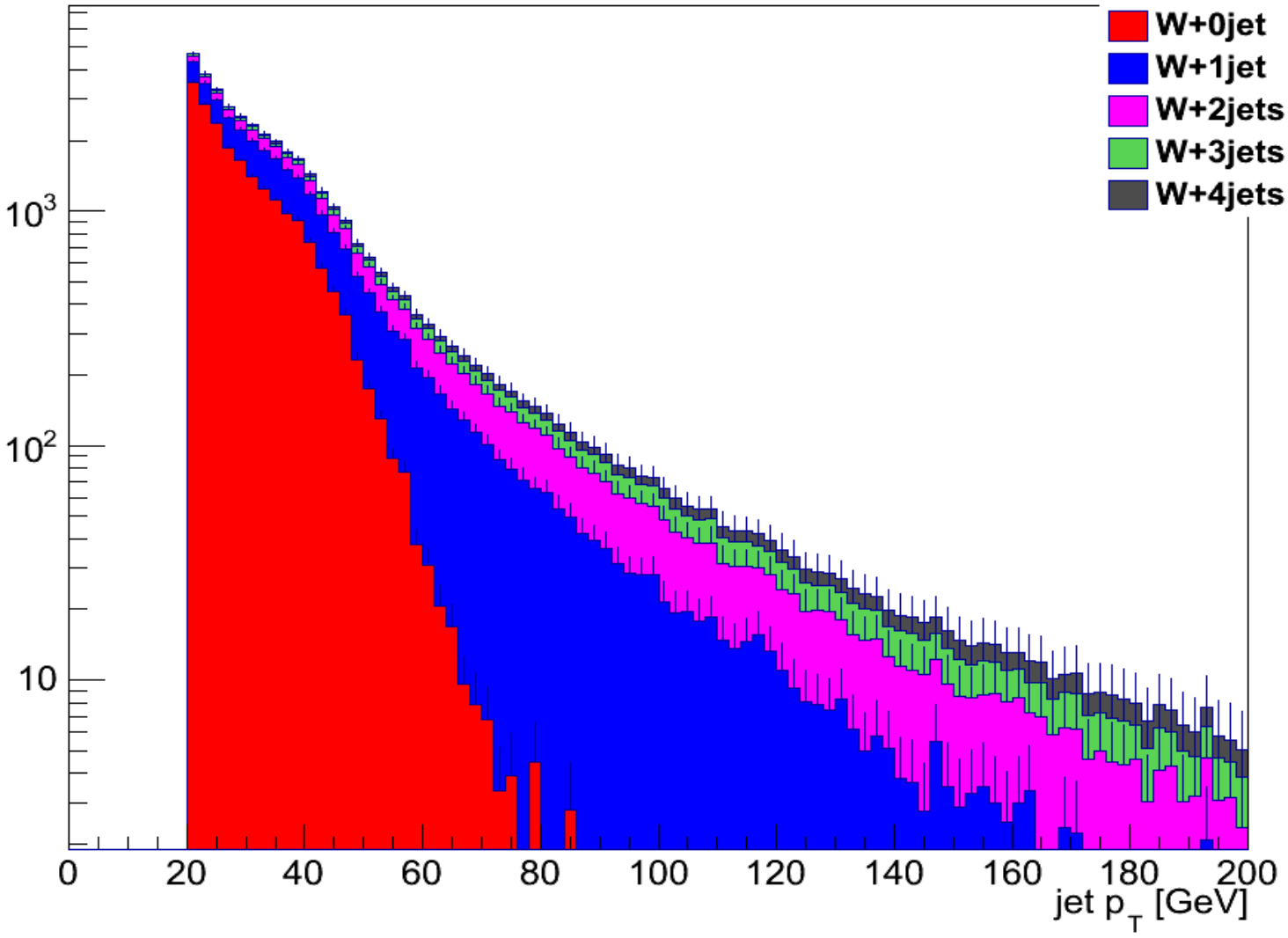
Setting used for Jet cleaning :
remove jets in a cone of 0.5 around selected leptons

Implemented in the AnalysisHelper.

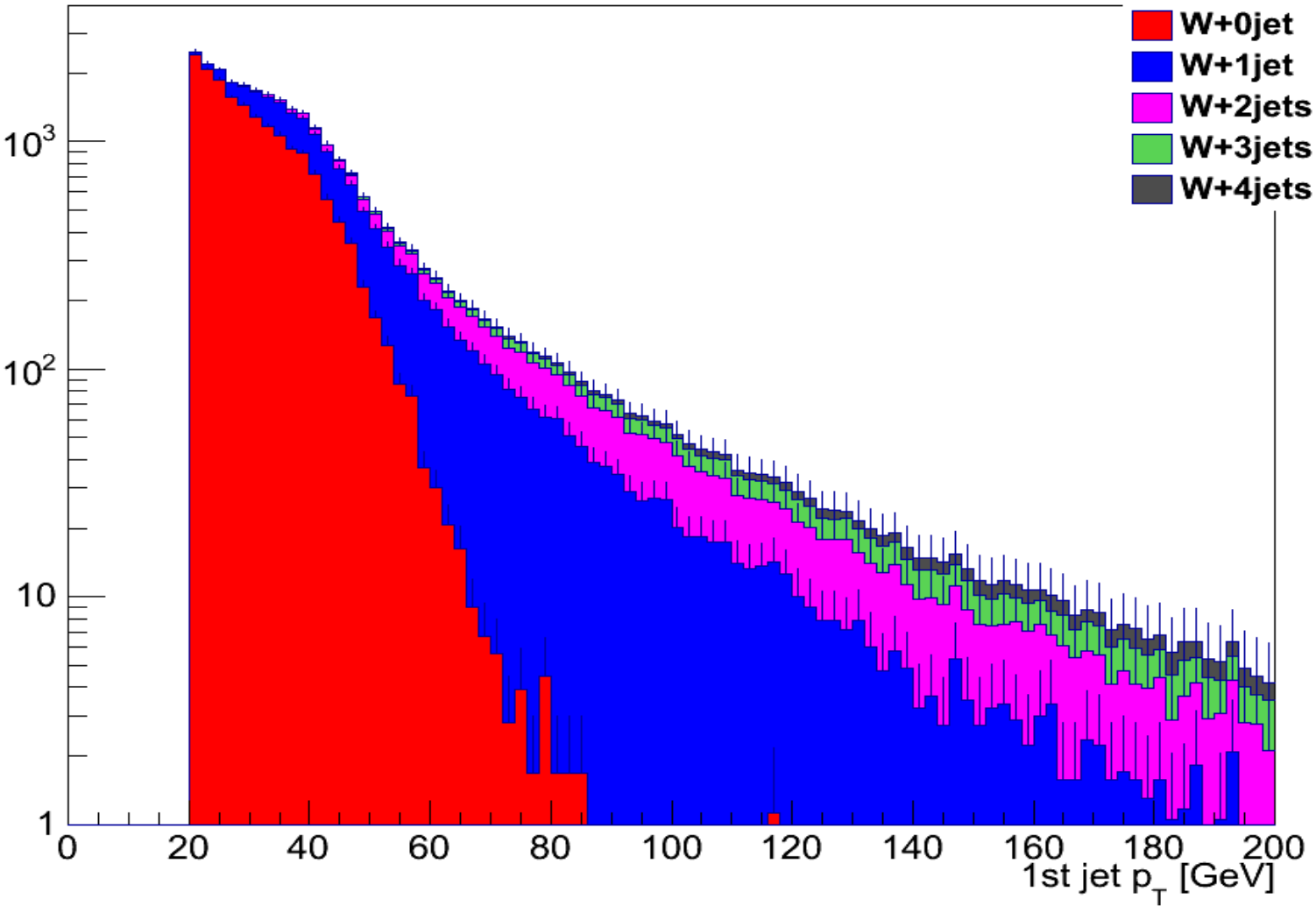
Validation plot @ ROOT level: multiciplicity of jets



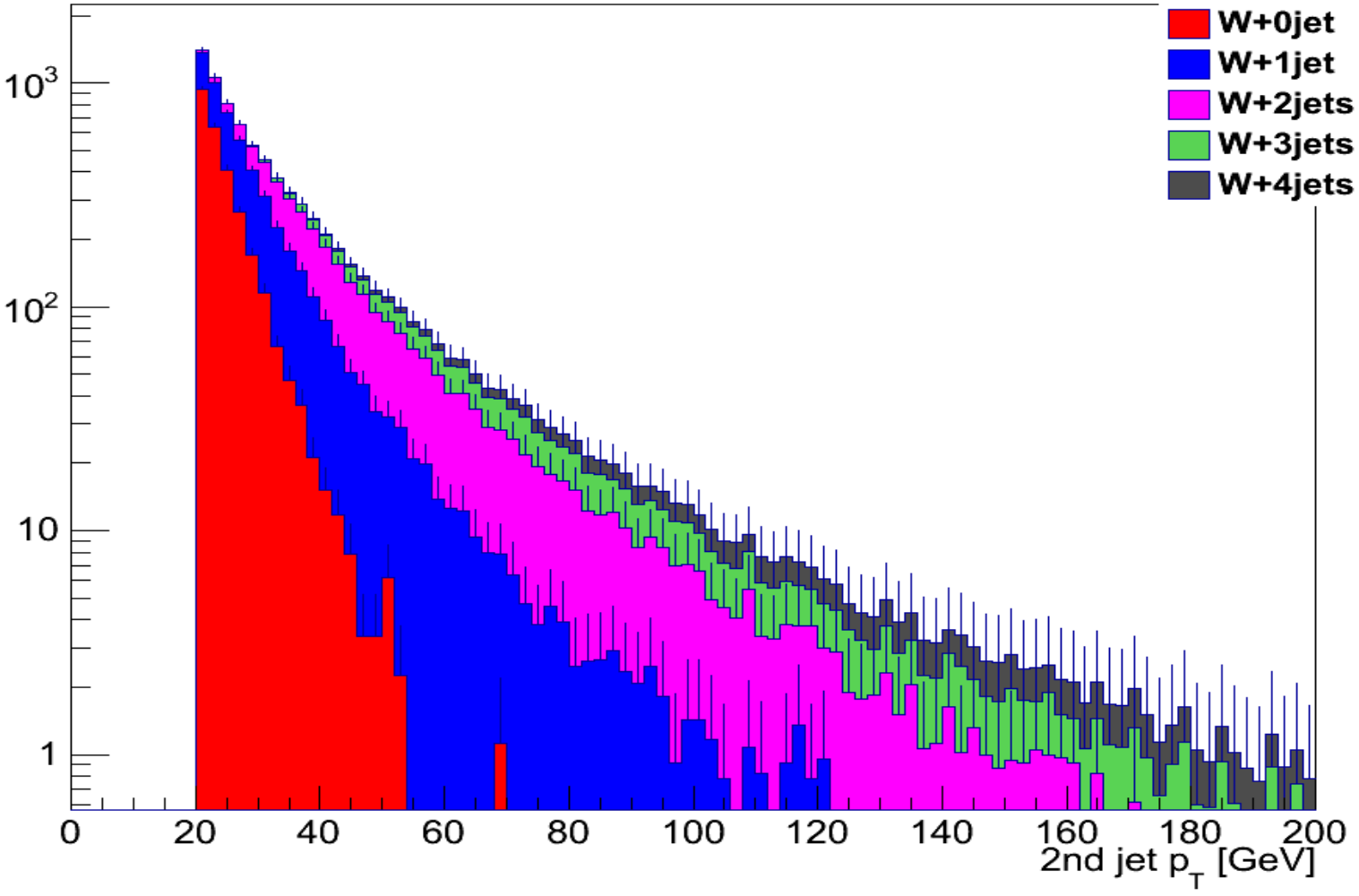
Validation plot @ ROOT level: PT of jets



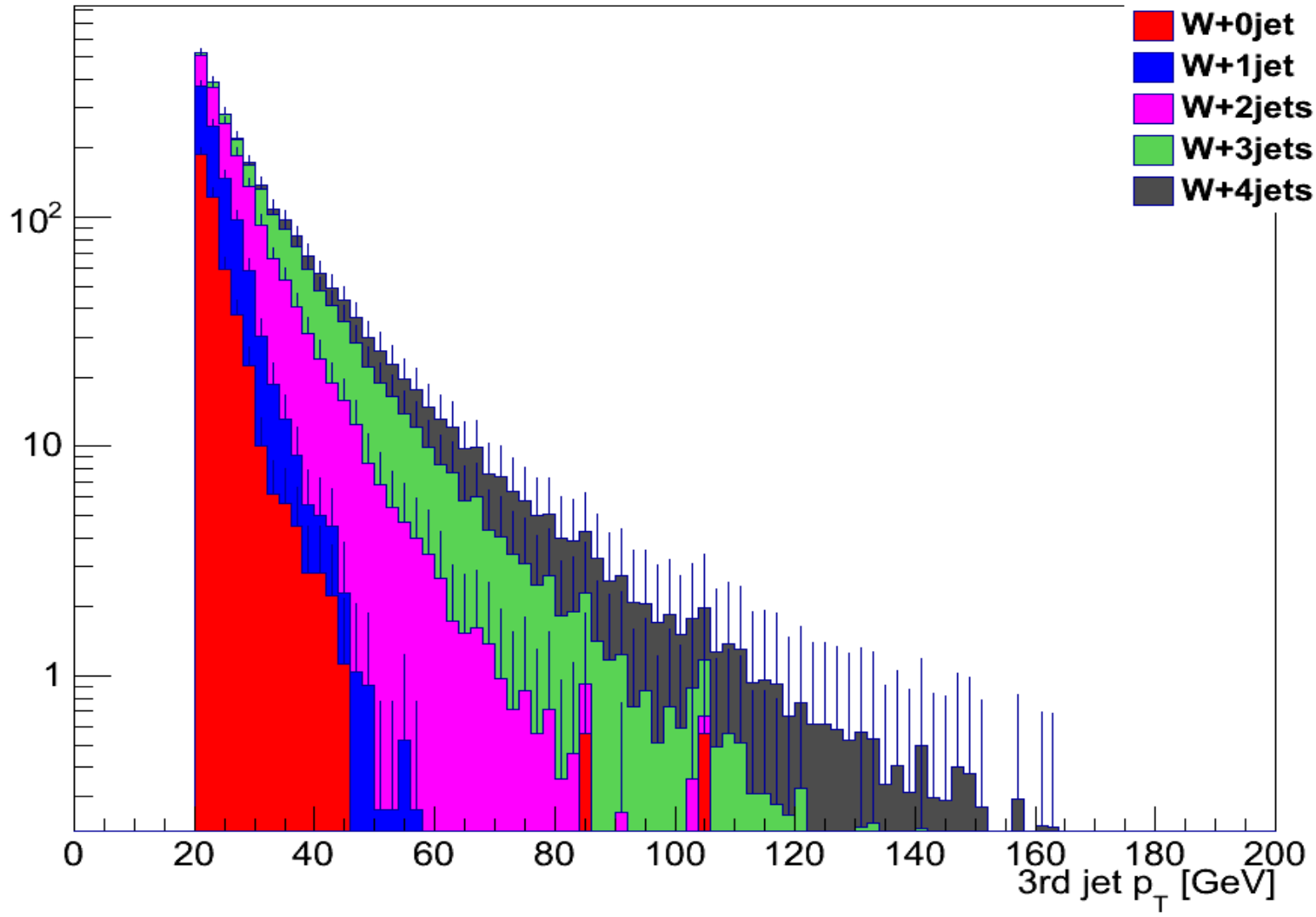
Validation plot @ ROOT level: PT of PT-rank-1 jets



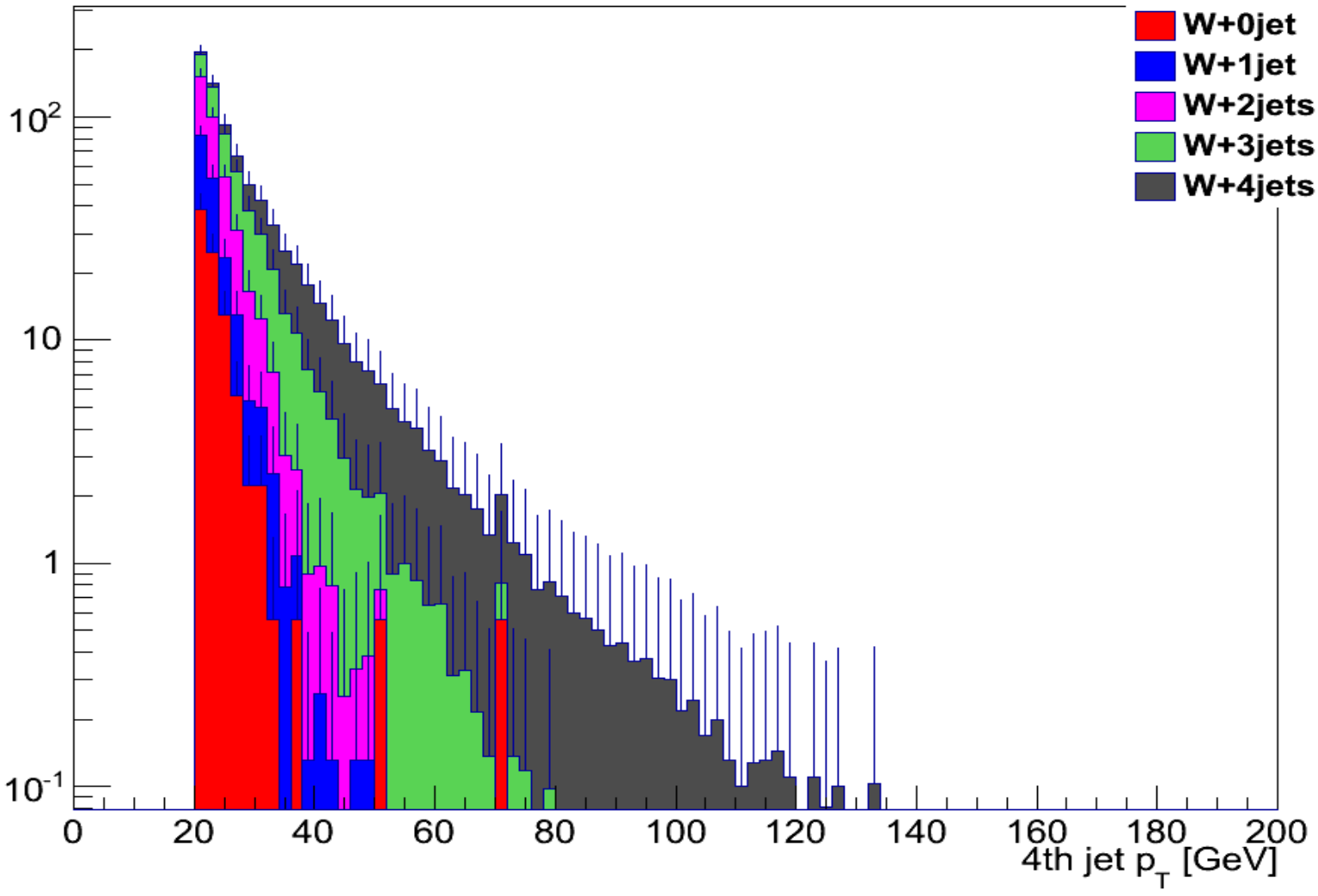
Validation plot @ ROOT level: PT of PT-rank-2 jets



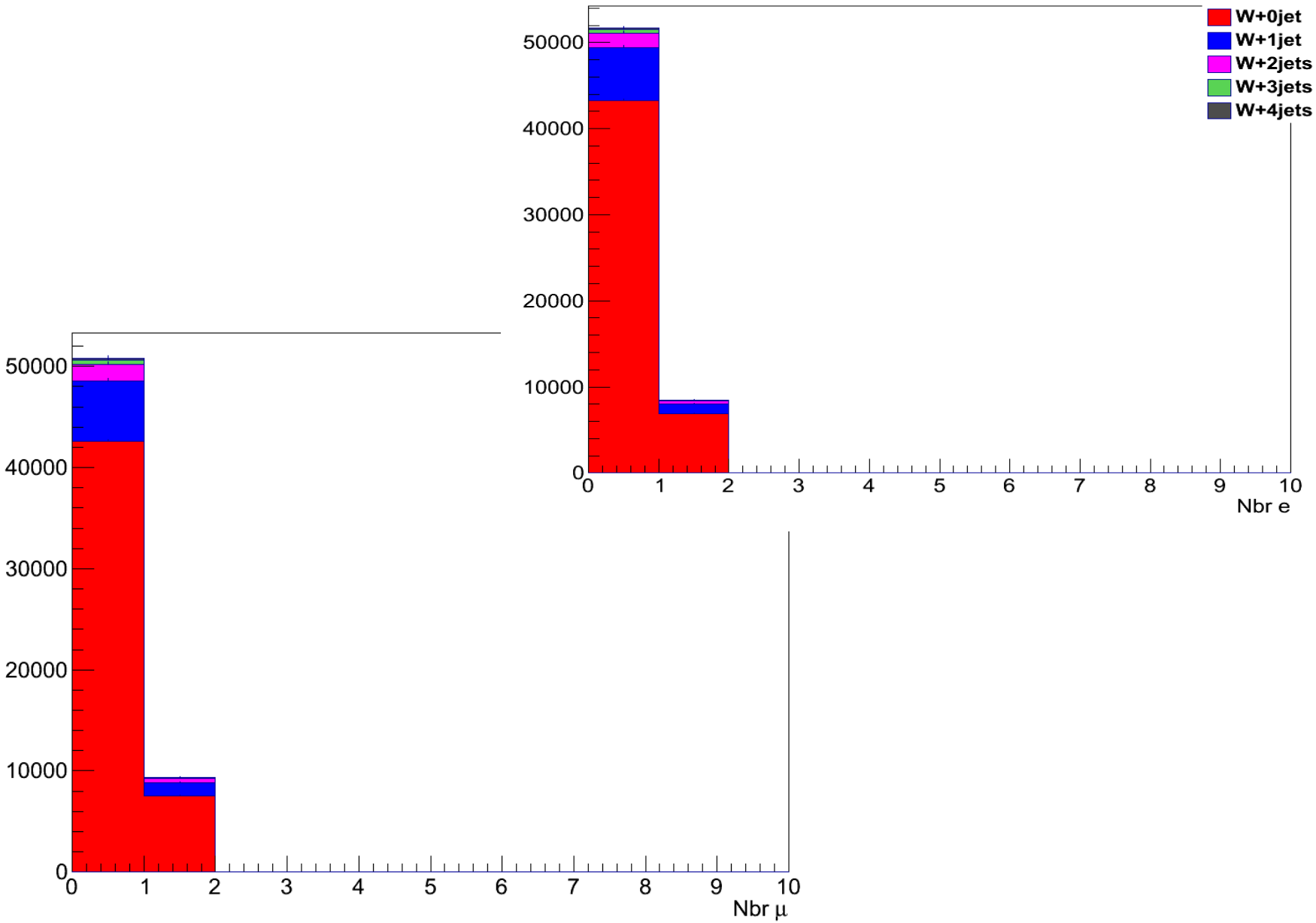
Validation plot @ ROOT level: PT of PT-rank-3 jets



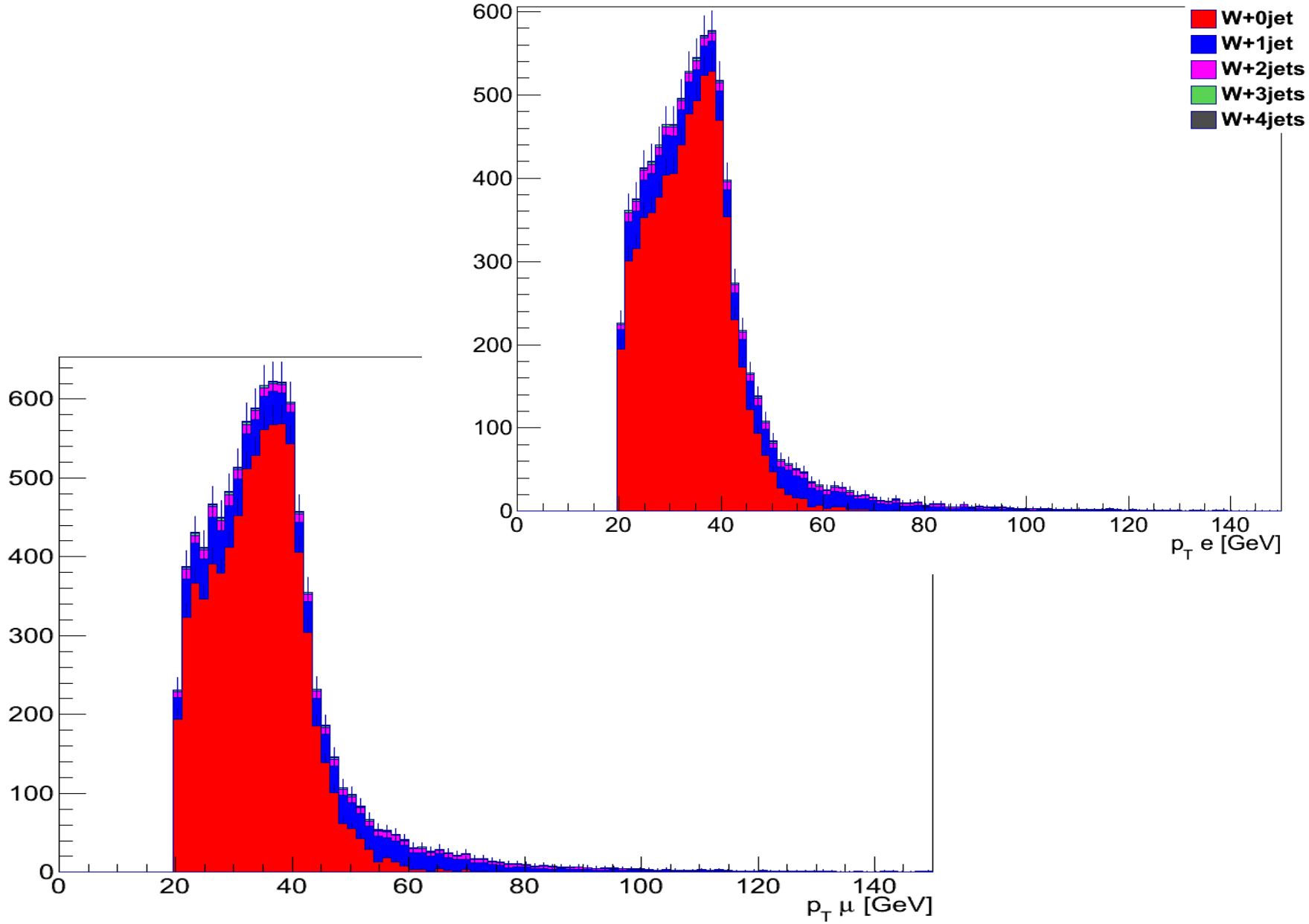
Validation plot @ ROOT level: PT of PT-rank-4 jets



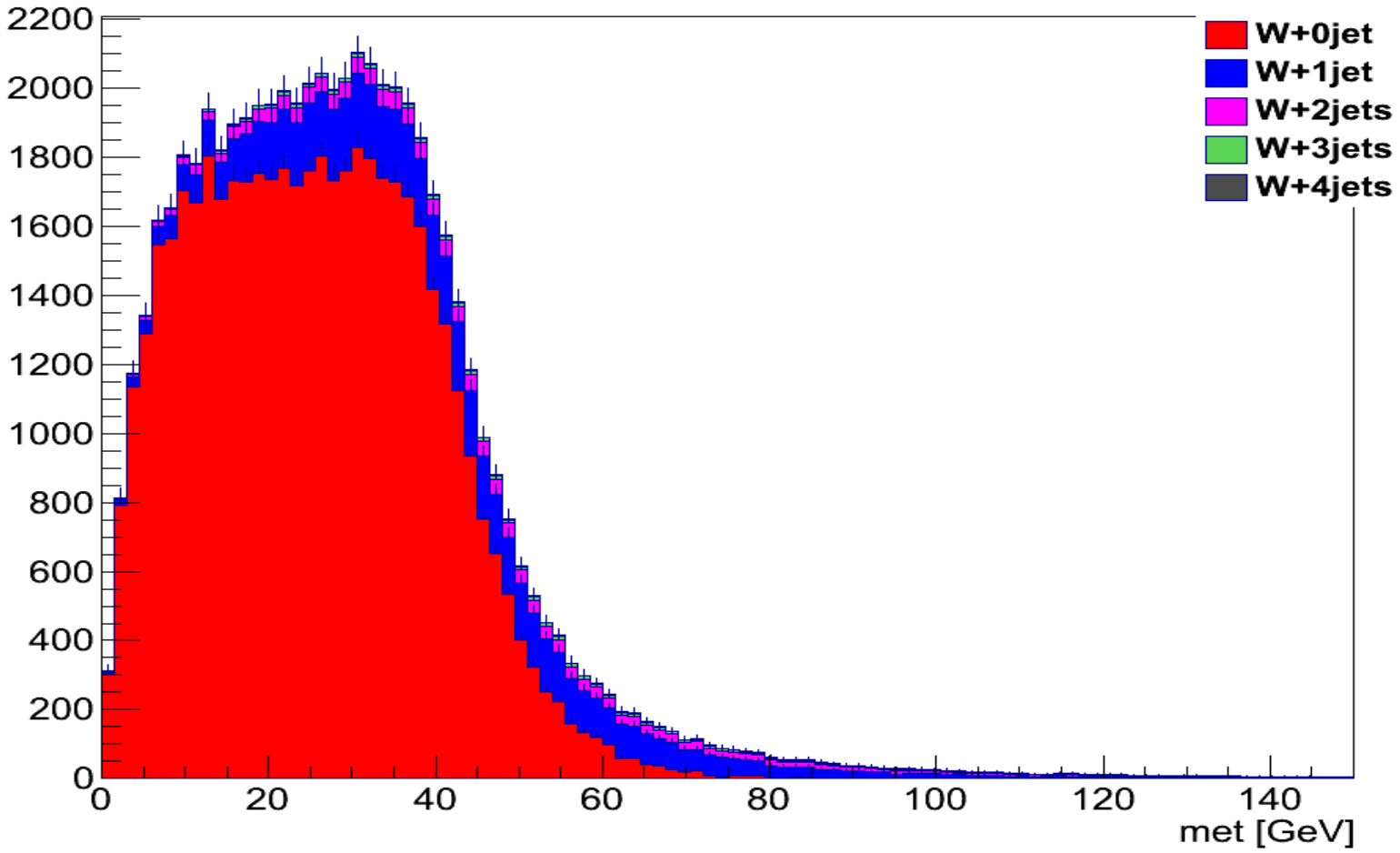
Validation plot @ ROOT level: multiciplicity of isolated leptons



Validation plot @ ROOT level: PT of isolated leptons



Validation plot @ ROOT level: MET



Validation plot @ ROOT level: W transverse mass