Résumé de l'analyse

Top group, Lyon

30 août 2012

Table des matières

1 Datasets

1.1 MC

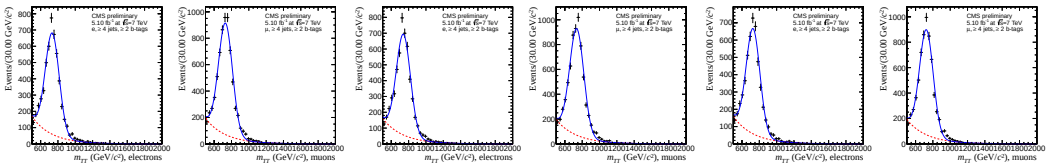
- $m = 500$ GeV : @@m-500-entries@@ entrées.
- $m = 750$ GeV : @@m-750-entries@@ entrées.
- $m = 1000$ GeV : @@m-1000-entries@@ entrées.
- $m = 1250$ GeV : @@m-1250-entries@@ entrées.
- $m = 1500$ GeV : @@m-1500-entries@@ entrées.

1.2 Data

@@data-entries@@ entrées.

2 Frit

2.1 $m = 750$ GeV

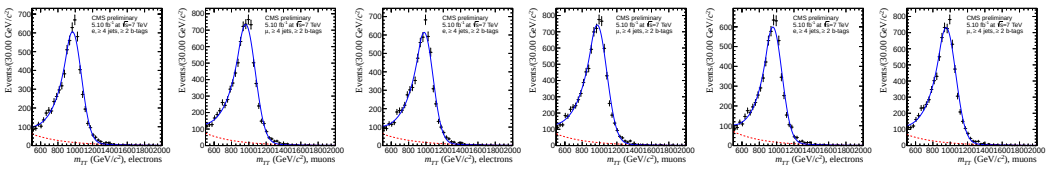


Nominal
$\chi^2 = 1.08391439915$

JEC Up
$\chi^2 = 1.11395680904$

JEC Down
$\chi^2 = 1.24580824375$

2.2 $m = 1000$ GeV

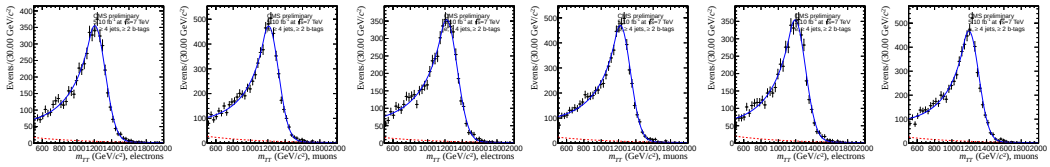


Nominal
$\chi^2 = 1.2271143198$

JEC Up
$\chi^2 = 1.2028452158$

JEC Down
$\chi^2 = 1.2334574461$

2.3 $m = 1250$ GeV

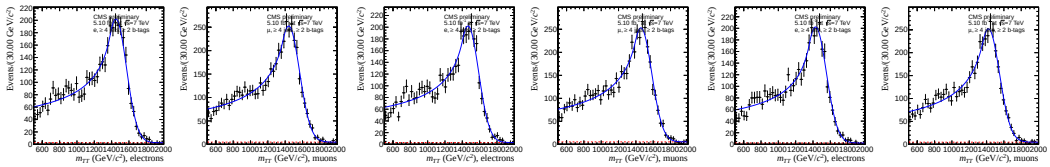


Nominal
$\chi^2 = 1.09203100204$

JEC Up
$\chi^2 = 1.15350282192$

JEC Down
$\chi^2 = 1.06738162041$

2.4 $m = 1500$ GeV



Nominal
$\chi^2 = 0.999175488949$

JEC Up
$\chi^2 = 1.01309919357$

JEC Down
$\chi^2 = 1.10465836525$

2.5 Efficacités

2.5.1 Efficacités de sélection

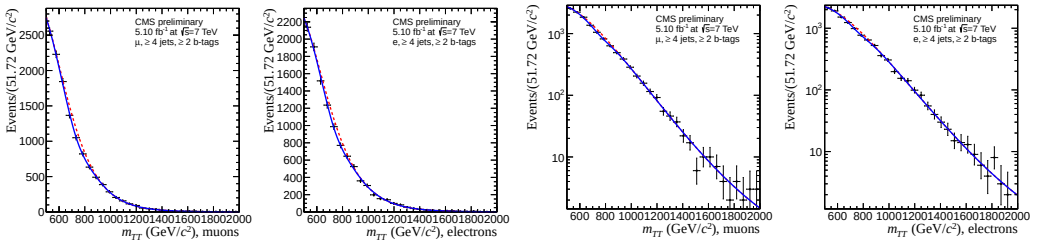
$m_{t\bar{t}}$	750 GeV	1000 GeV	1250 GeV	1500 GeV
$\epsilon(Z'), semi-mu$ (%)	2.75±0.04	3.73±0.07	3.58±0.09	2.94±0.05
$\epsilon(Z'), semi-e$ (%)	2.01±0.03	2.90±0.06	2.76±0.08	2.35±0.06

2.5.2 Efficacité totales

$m_{t\bar{t}}$	750 GeV	1000 GeV	1250 GeV	1500 GeV
$\epsilon(Z')$, semi-mu	2.11	2.76	2.55	2.08
$\epsilon(Z')$, semi-e	1.74	2.52	2.39	2.04

3 σ_{ref}

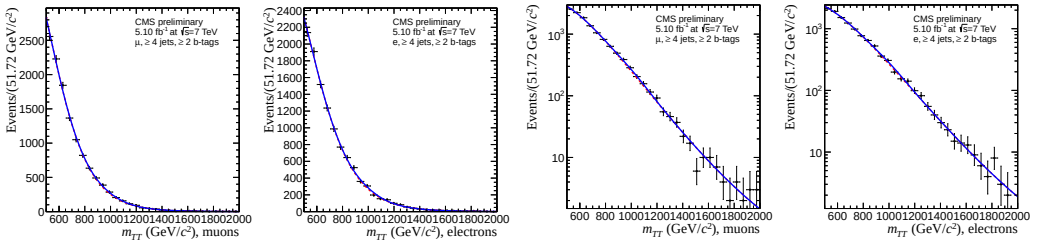
3.1 $m = 750$ GeV



Nominal Nominal, échelle log

- $\chi^2 = 0.97254472971$
- Statut du fit : OK

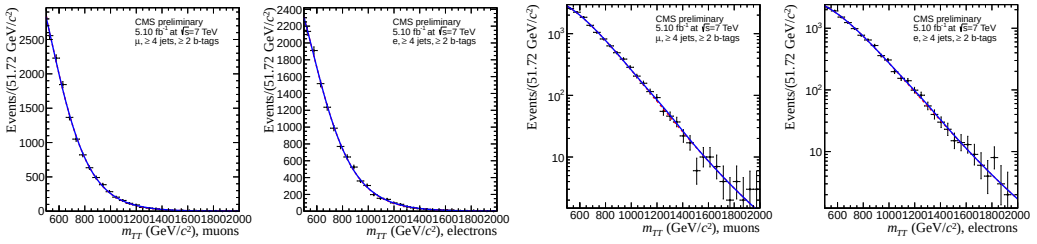
3.2 $m = 1000$ GeV



Nominal Nominal, échelle log

- $\chi^2 = 0.988131582737$
- Statut du fit : OK

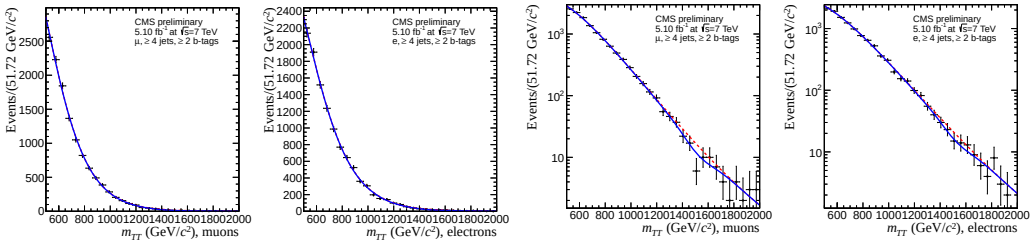
3.3 $m = 1250$ GeV



Nominal Nominal, échelle log

- $\chi^2 = 1.0089353323$
- Statut du fit : OK

3.4 $m = 1500$ GeV



Nominal Nominal, échelle log

– $\chi^2 = 0.969866275787$
– Statut du fit : OK

3.5 Sections efficaces

$m_{t\bar{t}}$	750 GeV	1000 GeV	1250 GeV	1500 GeV
σ (pb)	-4.58870211453	0.760380954765	0.271851266856	-0.616997357645

4 Erreurs systématiques

4.1 JEC

$m_{t\bar{t}}$	750 GeV		1000 GeV		1250 GeV		1500 GeV	
	JEC up	JEC down	JEC up	JEC down	JEC up	JEC down	JEC up	JEC down
χ^2	1.0373	0.9478	1.0516	0.953	1.0637	0.971	1.0422	0.9481
Fit	OK	OK	OK	OK	OK	OK	OK	OK
σ (pb)	-4.1846	-3.8448	0.5194	0.9009	0.3104	-0.033	-0.4854	-0.4717
σ_{syst} (pb)	0.1251		0.2508		0.6316		0.2244	

4.2 Signal

Paramètre	Variation	χ^2	σ (pb)	Statut du fit
$m = 750$ GeV				
muon_mean	up	0.9729	-4.5746	OK
	down	0.9722	-4.6093	OK
muon_sigma	up	0.9730	-4.6346	OK
	down	0.9724	-4.5368	OK
electron_sigma	up	0.9725	-4.6285	OK
	down	0.9725	-4.5536	OK

La suite page suivante

Paramètre	Variation	χ^2	σ (pb)	Statut du fit
muon_alpha	up	0.9725	-4.5887	OK
	down	0.9728	-4.5860	OK
electron_mean	up	0.9733	-4.5288	OK
	down	0.9718	-4.6519	OK
electron_alpha	up	0.9725	-4.5887	OK
	down	0.9726	-4.5937	OK
$\sigma_{syst} = 0.0194$ pb				
$m = 1000$ GeV				
muon_mean	up	0.9880	0.7654	OK
	down	0.9884	0.7522	OK
muon_sigma	up	0.9882	0.7664	OK
	down	0.9882	0.7513	OK
electron_sigma	up	0.9875	0.7915	OK
	down	0.9888	0.7290	OK
muon_alpha	up	0.9878	0.7644	OK
	down	1.2645	0.7644	OK
electron_mean	up	0.9885	0.7454	OK
	down	0.9878	0.7738	OK
electron_alpha	up	0.9884	0.7439	OK
	down	0.9879	0.7764	OK
$\sigma_{syst} = 0.0519$ pb				
$m = 1250$ GeV				
muon_mean	up	1.0095	0.2474	OK
	down	1.0095	0.2799	OK
muon_sigma	up	1.0089	0.2625	OK
	down	1.0089	0.2798	OK
electron_sigma	up	1.0088	0.2591	OK
	down	1.0091	0.2844	OK
muon_alpha	up	1.0140	0.2514	OK
	down	1.0092	0.2804	OK
electron_mean	up	1.0139	0.2559	OK
	down	1.0145	0.2764	OK
electron_alpha	up	1.0095	0.2613	OK
	down	1.0095	0.2655	OK
$\sigma_{syst} = 0.1094$ pb				
$m = 1500$ GeV				
muon_mean	up	0.9696	-0.6120	OK
	down	0.9704	-0.6191	OK
muon_sigma	up	0.9699	-0.6168	OK
	down	0.9699	-0.6176	OK

La suite page suivante

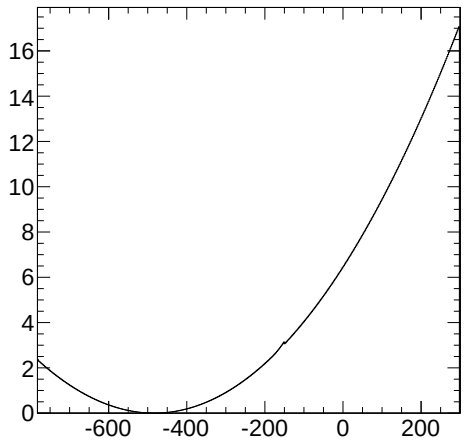
Paramètre	Variation	χ^2	σ (pb)	Statut du fit
electron_sigma	up	0.9702	-0.6171	OK
	down	0.9697	-0.6160	OK
muon_alpha	up	0.9693	-0.6016	OK
	down	0.9707	-0.6312	OK
electron_mean	up	0.9706	-0.6048	OK
	down	0.9692	-0.6279	OK
electron_alpha	up	0.9708	-0.5915	OK
	down	0.9690	-0.6424	OK
$\sigma_{syst} = 0.0515$ pb				

4.3 Background

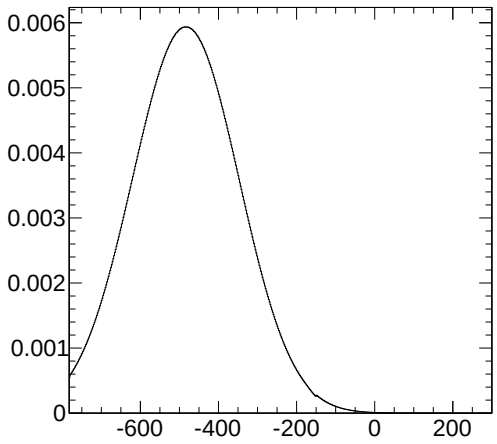
Fonction de bkg	χ^2	σ (pb)	Statut du fit
$m = 750$ GeV			
fit_pdf_falt.json	1.0058	-4.1771	OK
$\sigma_{syst} = 0.0897$ pb			
$m = 1000$ GeV			
fit_pdf_falt.json	0.9887	1.2250	Echec
$\sigma_{syst} = 0.6110$ pb			
$m = 1250$ GeV			
fit_pdf_falt.json	0.9960	0.4204	OK
$\sigma_{syst} = 0.5465$ pb			
$m = 1500$ GeV			
fit_pdf_falt.json	0.9383	-0.8119	OK
$\sigma_{syst} = 0.3159$ pb			

5 Likelihood scan

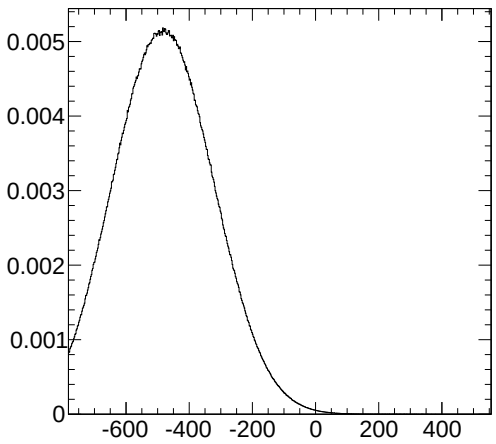
5.1 $m = 750$ GeV



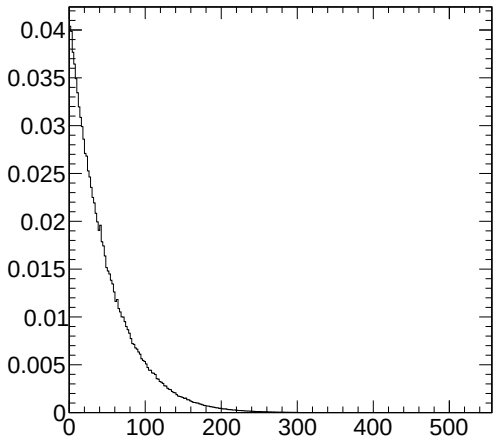
Likelihood scan



PDF scan

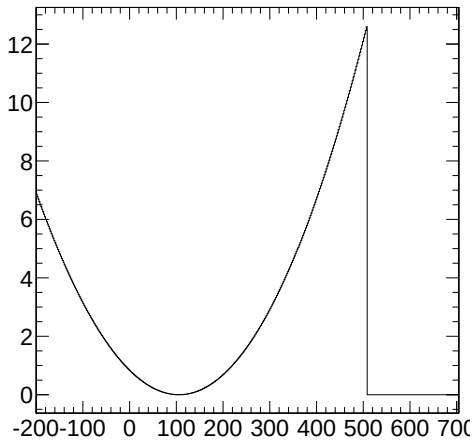


PDF scan + systématiques

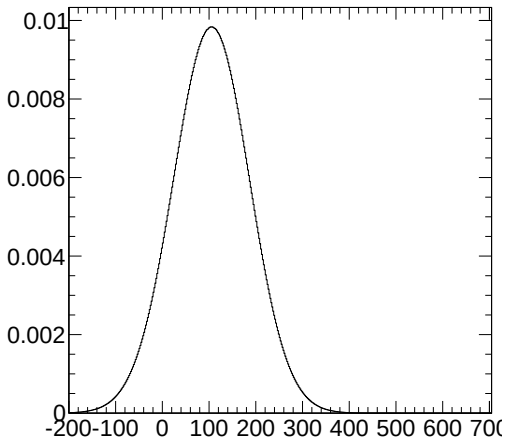


PDF scan + systématiques pour $N_{sig} > 0$

5.2 $m = 1000$ GeV



Likelihood scan



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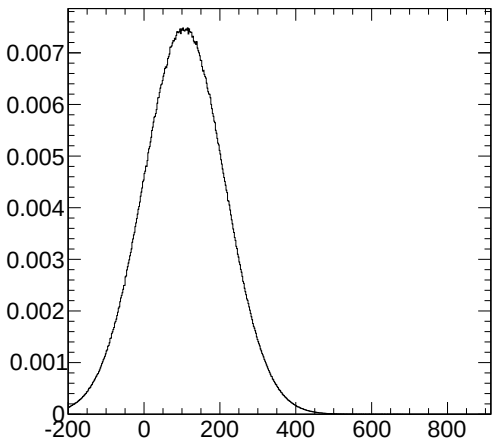
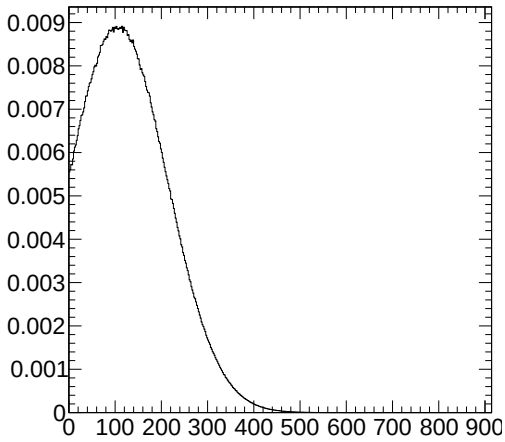
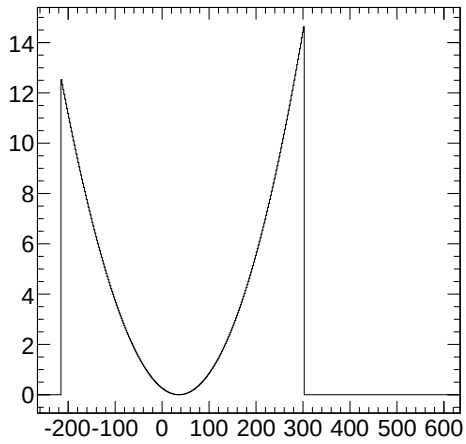


PDF scan + systématiques

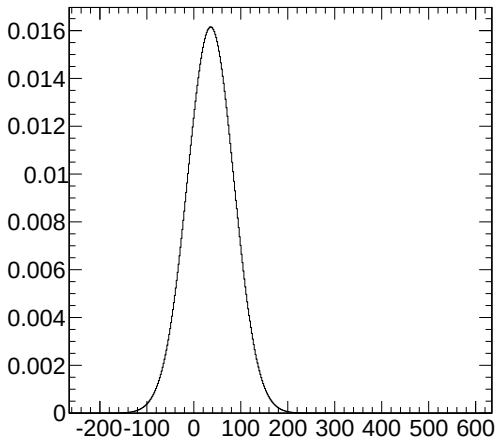


PDF scan + systématiques pour $N_{sig} > 0$

5.3 $m = 1250$ GeV



Likelihood scan



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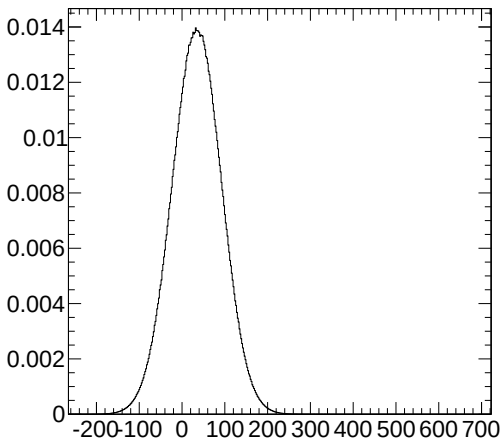
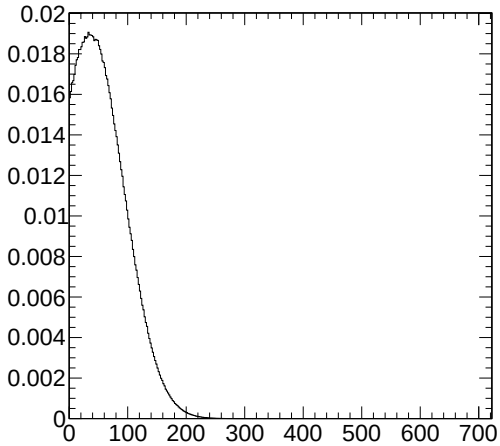
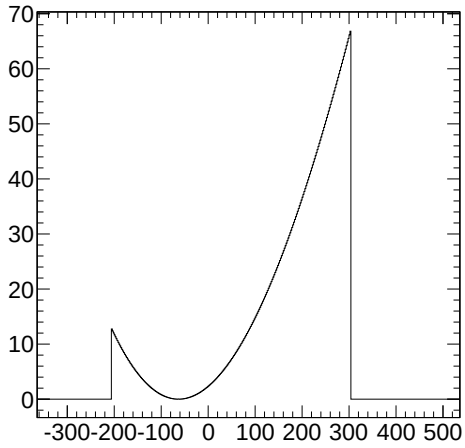


PDF scan + systématiques

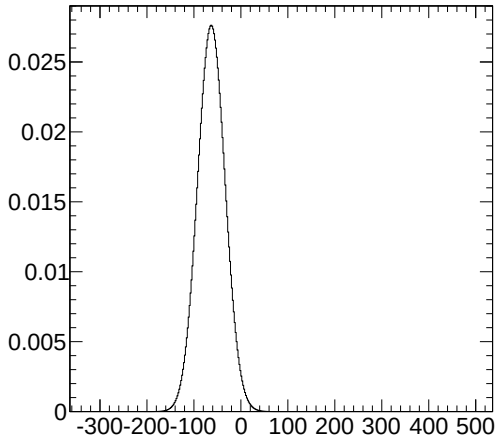


PDF scan + systématiques pour $N_{sig} > 0$

5.4 $m = 1500$ GeV



Likelihood scan



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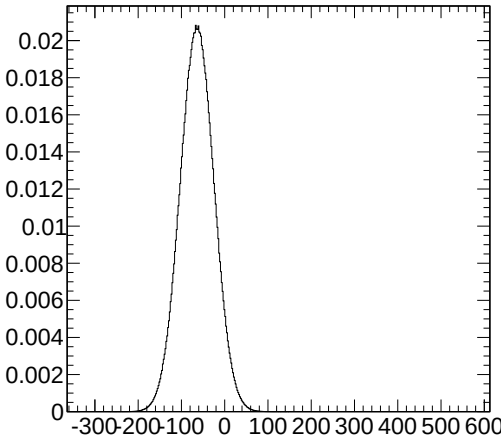
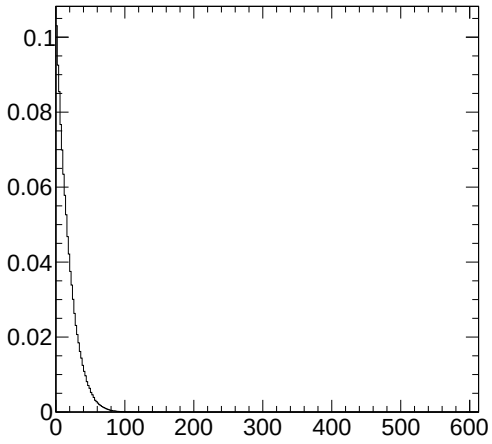


PDF scan + systématiques



PDF scan + systématiques pour $N_{sig} > 0$

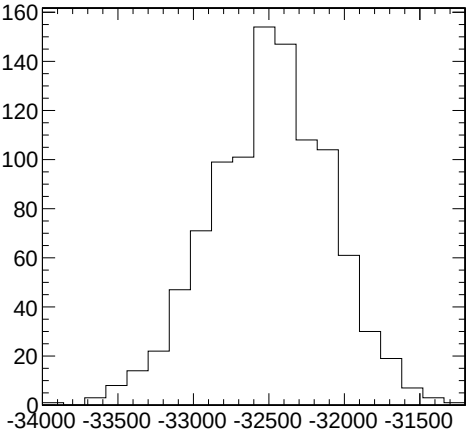
5.5 Limites observées

$m_{t\bar{t}}$	750 GeV	1000 GeV	1250 GeV	1500 GeV
Limite observée (pb)	1.2303	2.1121	1.0865	0.4383

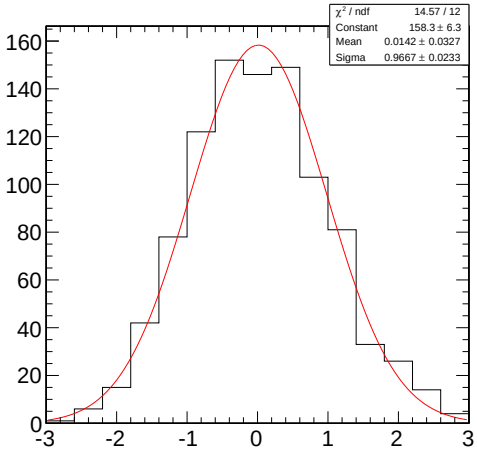
6 Toy MC

- Nombre de toys par masse : 1000
- Nombre de jobs par masse : 100
- Nombre de toys par jobs : 10

6.1 $m = 750$ **GeV**



Nll Toy exp



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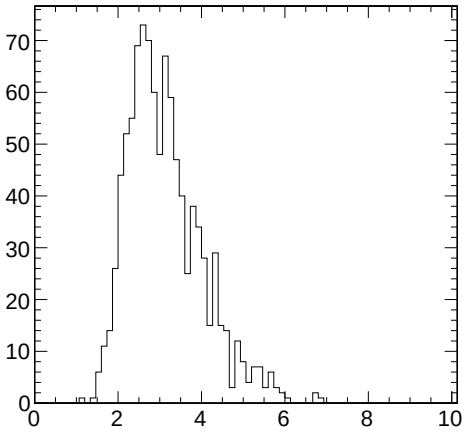
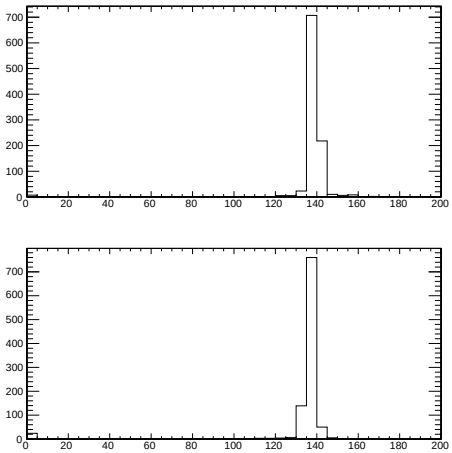
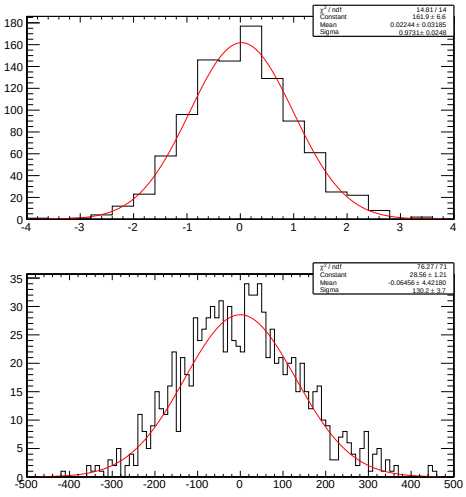


Limite Z'

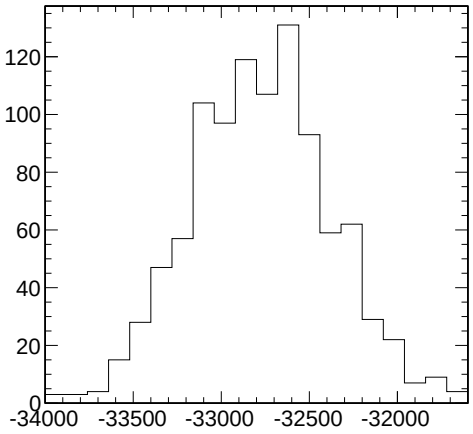


Erreur sur limite

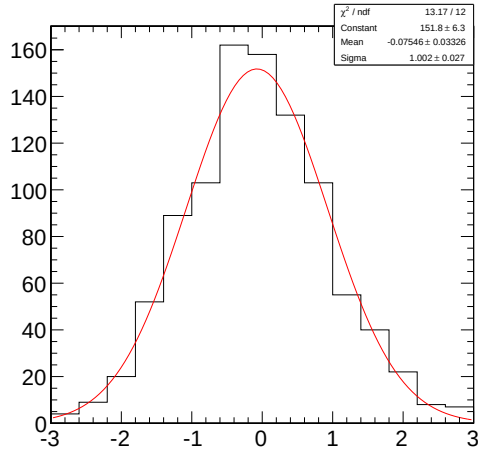


Plots e μ

6.2 $m = 1000$ **GeV**



Nll Toy exp



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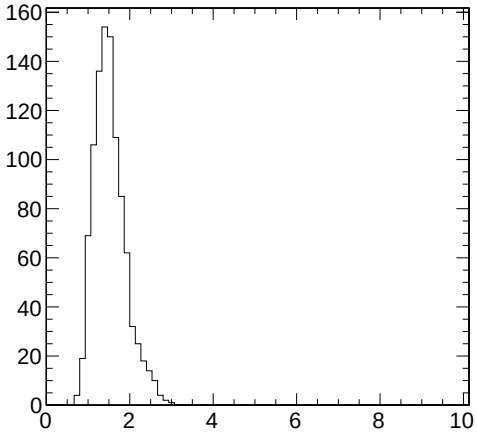
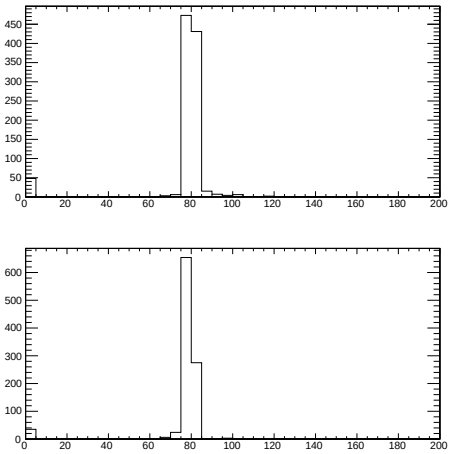
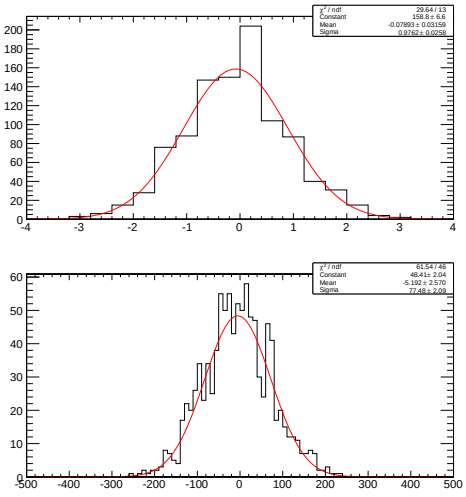


Limite Z'

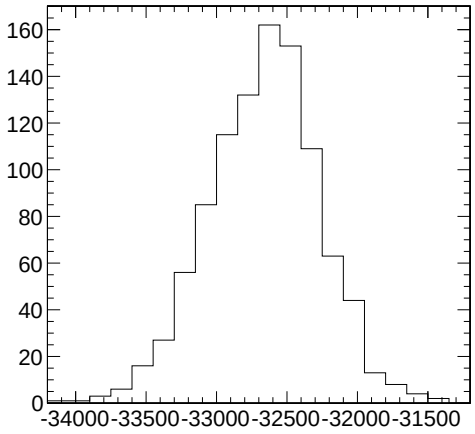


Erreur sur limite

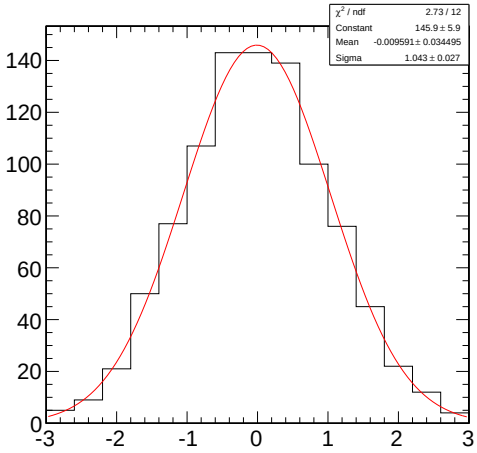


Plots e μ

6.3 $m = 1250$ **GeV**



Nll Toy exp



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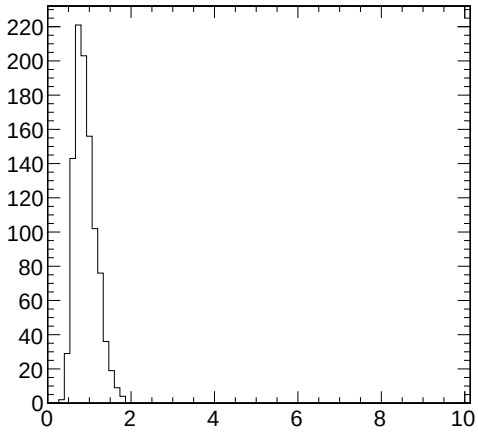
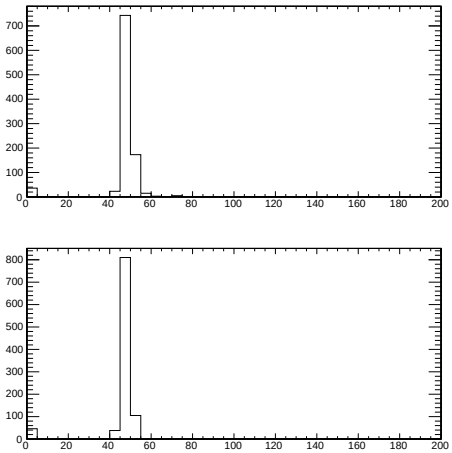
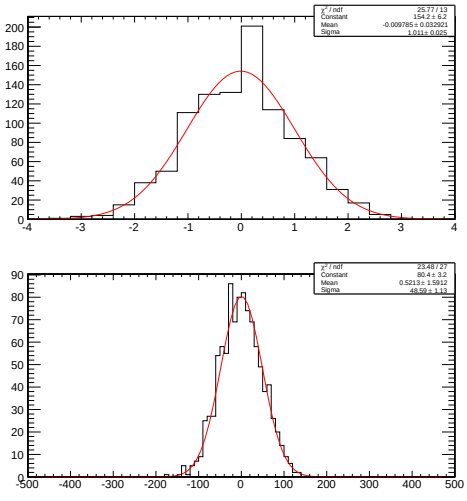


Limite Z'

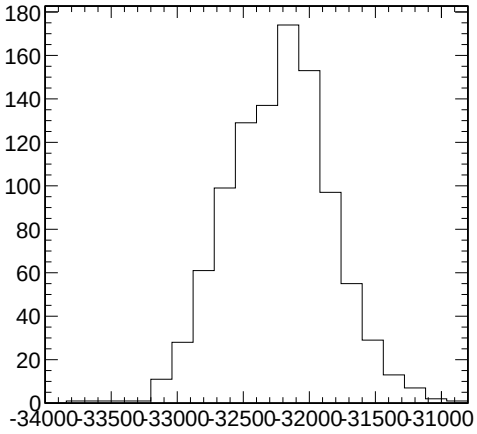


Erreur sur limite

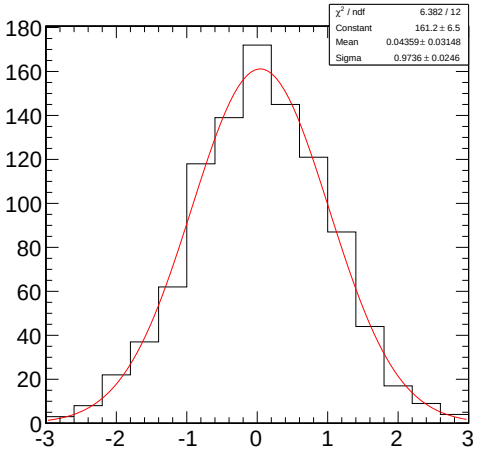


Plots e μ

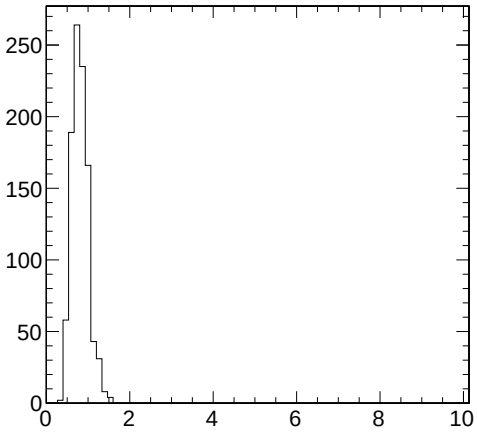
6.4 $m = 1500$ **GeV**



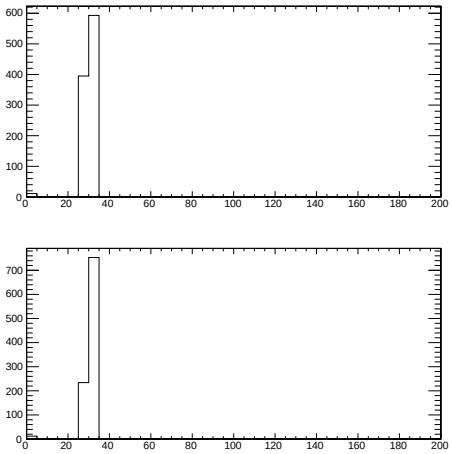
Nll Toy exp



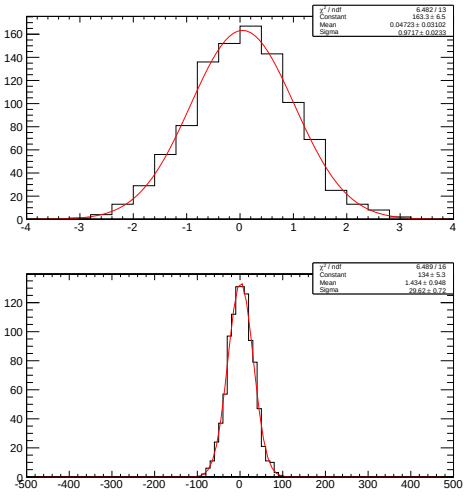
Pull



Limite Z'



Erreur sur limite



Plots e μ

6.5 Limites attendues

$m_{t\bar{t}}$	750 GeV	1000 GeV	1250 GeV	1500 GeV
Limite attendue (pb)	2.9833	1.4773	0.869	0.7934
Bande d'exclusion (68%) (pb)	$^{+1.0167}_{-0.7045}$	$^{+0.4065}_{-0.3251}$	$^{+0.3101}_{-0.2154}$	$^{+0.2138}_{-0.1896}$
Bande d'exclusion (95%) (pb)	$^{+2.35}_{-1.1929}$	$^{+0.9798}_{-0.5401}$	$^{+0.6468}_{-0.3632}$	$^{+0.484}_{-0.3406}$

7 Limites

$m_{t\bar{t}}$	750 GeV	1000 GeV	1250 GeV	1500 GeV
Limite observée (pb)	1.2303	2.1121	1.0865	0.4383
Limite attendue (pb)	2.9833	1.4773	0.869	0.7934
Bande d'exclusion (68%) (pb)	$^{+1.0167}_{-0.7045}$	$^{+0.4065}_{-0.3251}$	$^{+0.3101}_{-0.2154}$	$^{+0.2138}_{-0.1896}$
Bande d'exclusion (95%) (pb)	$^{+2.35}_{-1.1929}$	$^{+0.9798}_{-0.5401}$	$^{+0.6468}_{-0.3632}$	$^{+0.484}_{-0.3406}$