Background Fits for $\tau \to \mu\mu\mu$ with new vetos

Marcin Chrzaszcz

Institute of Nuclear Physics PAN

March 23, 2012

Preselection

Cuts that were used previosly:

1. Trigger decision:
   - L0Dec + Hlt1Dec + Hlt2Dec + cleaningcut
2. Particle Identification:
3. Mass Cuts:
   - $mass(p0p1) > 250 MeV$
   - $abs(mass(p0p2 - 1020 MeV)) > 20 MeV$
   - $abs(mass(p1p2 - 1020 MeV)) > 20 MeV$
4. τ mass cut:
   - $mass(\tau) \in (1600 - 1950) MeV$

Preselection2

New cuts:

1. η cut: $mass_p0p1 > 550 \wedge mass_p0p2 > 550 \wedge mass_p1p2 > 550$
2. ω cut: $abs(mass_p0p1 - 782) > 20 \wedge abs(mass_p0p1 - 782) > 20 \wedge abs(mass_p0p1 - 782) > 20$

Binning

Bins

The same bins =)

PID	Geo
−0.03	−1.0
−0.005	0.116
0.03	0.44
0.07	0.616
1	1.0

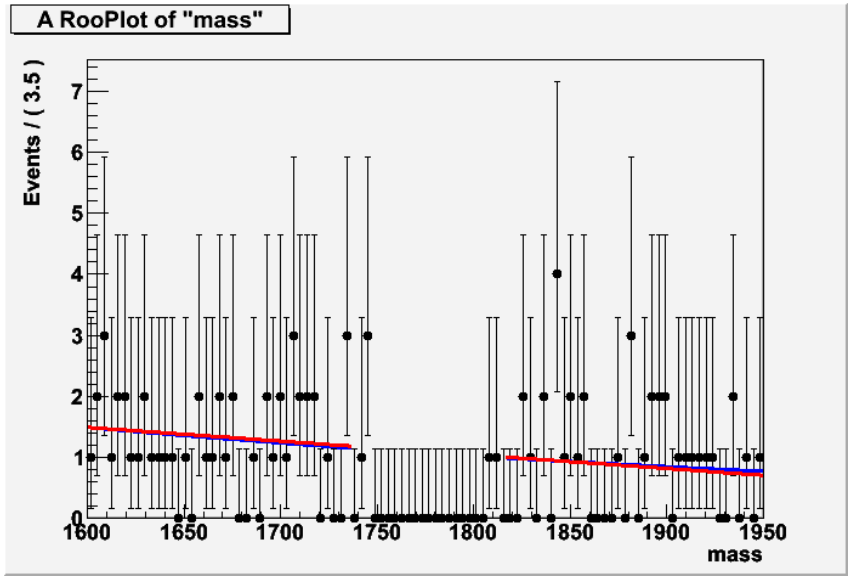
Please note colors in plots

Exponential Linear

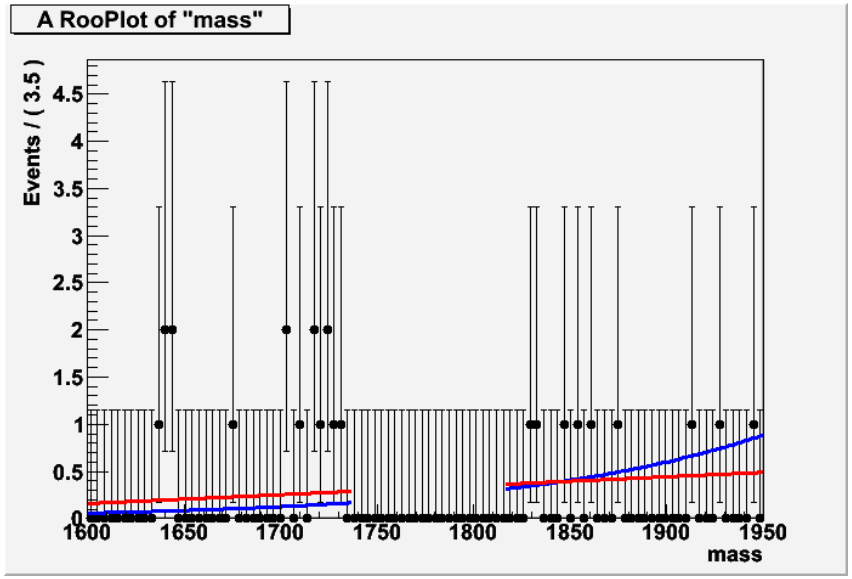
FITS

NEW PLOTS!

Exponential , Linear



$Pid \in (0.005, 0.03)$,
$Geo \in (0.116, 0.44)$

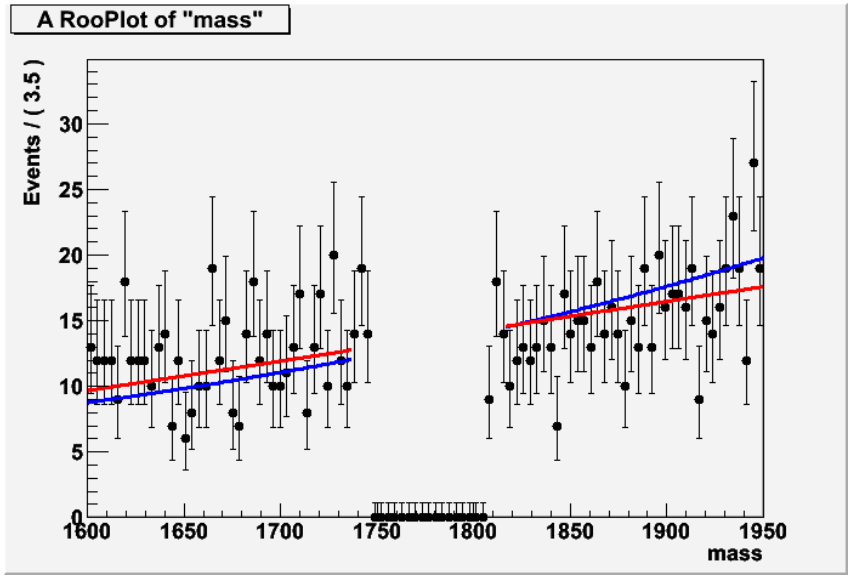


$Pid \in (0.005, 0.03)$,
$Geo \in (0.44, 0.616)$

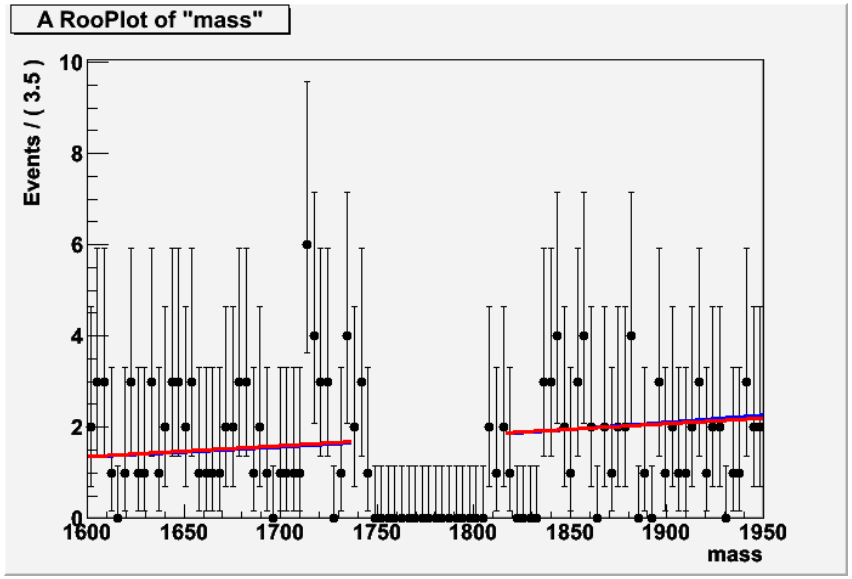
FITS

NEW PLOTS!

Exponential , Linear



$Pid \in (0.005, 0.03),\ Geo \in (-1, 0.116)$

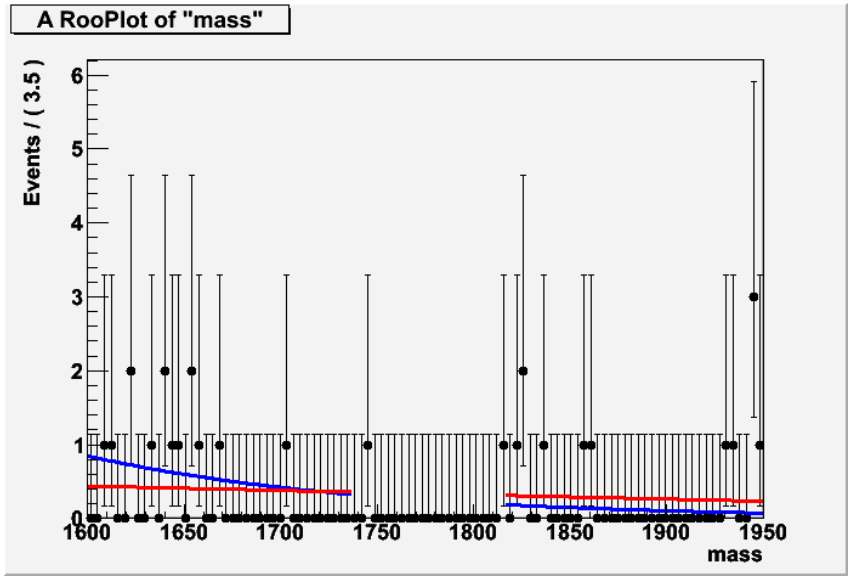


$Pid \in (-0.03, -0.005),$
$Geo \in (0.116, 0.44)$

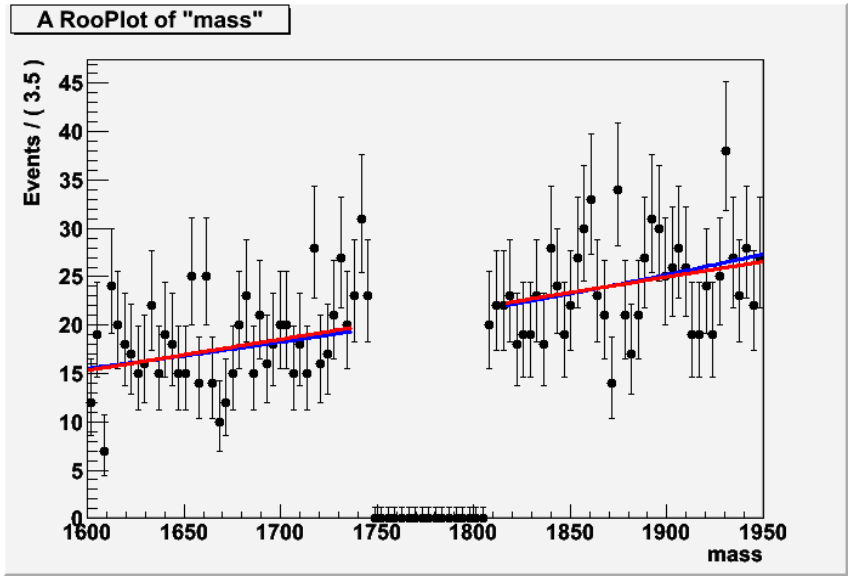
FITS

NEW PLOTS!

Exponential , Linear



$Pid \in (-0.03, -0.005)$,
$Geo \in (0.44, 0.616)$

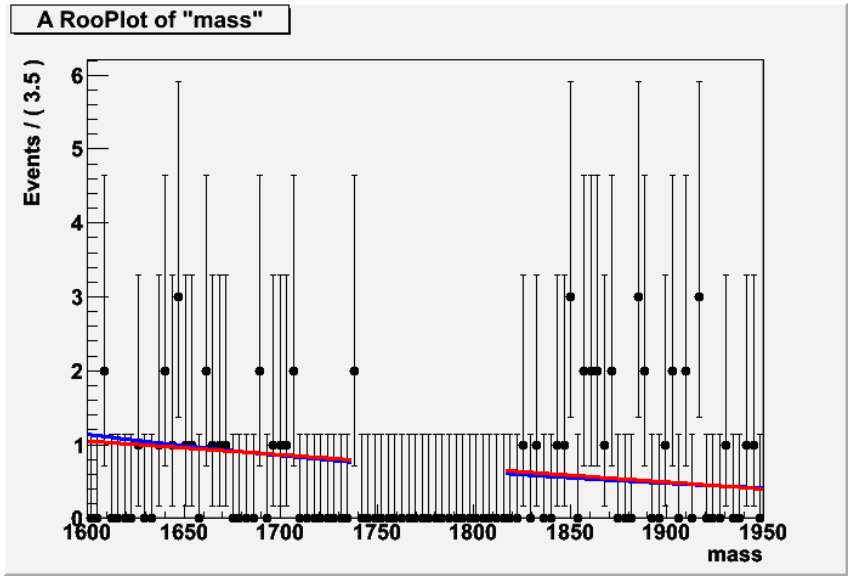


$Pid \in (-0.03, -0.005)$,
$Geo \in (-1, 0.116)$

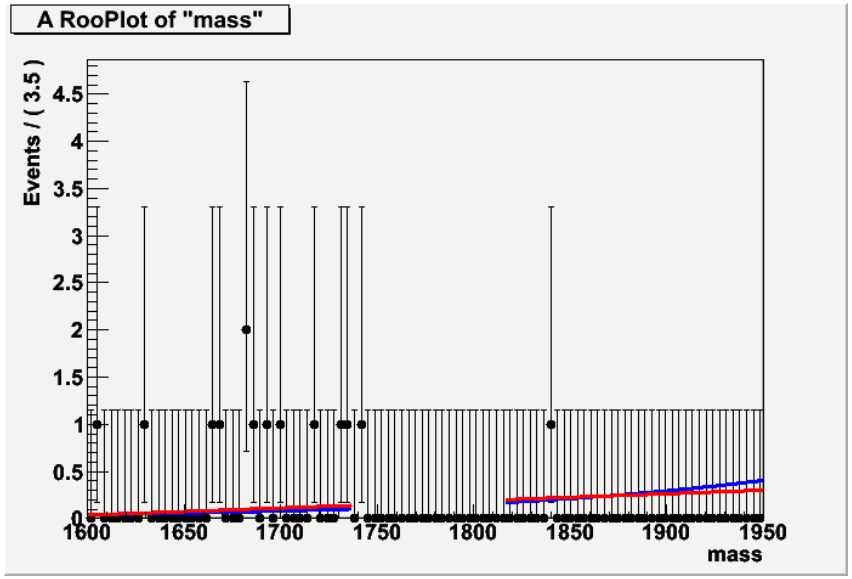
FITS

NEW PLOTS!

Exponential , Linear



$Pid \in (0.03, 0.07),\ Geo \in (0.116, 0.44)$

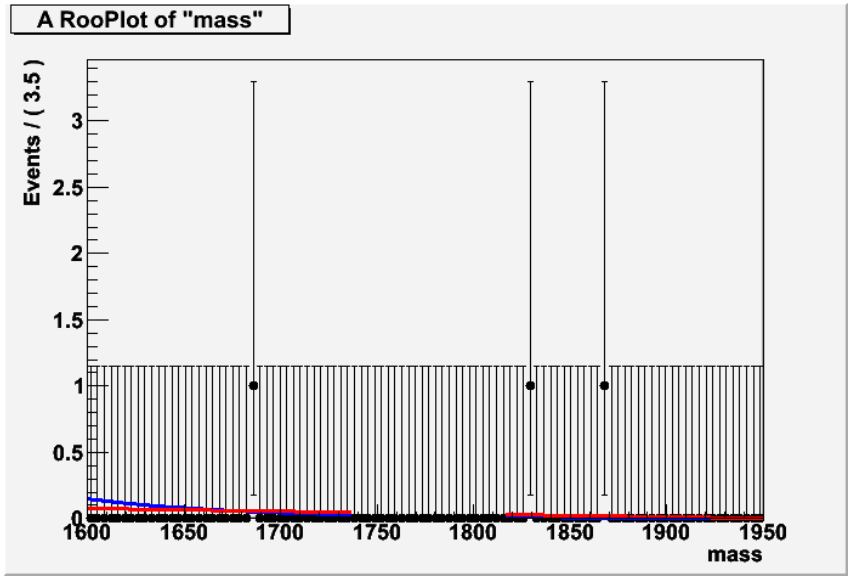


$Pid \in (0.03, 0.07),\ Geo \in (0.44, 0.616)$

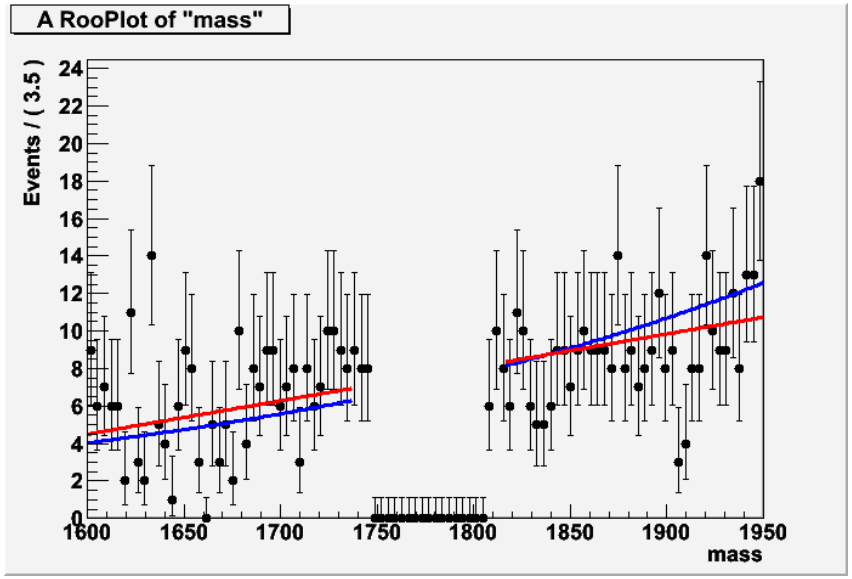
FITS

NEW PLOTS!

Exponential , Linear



$Pid \in (0.03, 0.07),\ Geo \in (0.616, 1)$

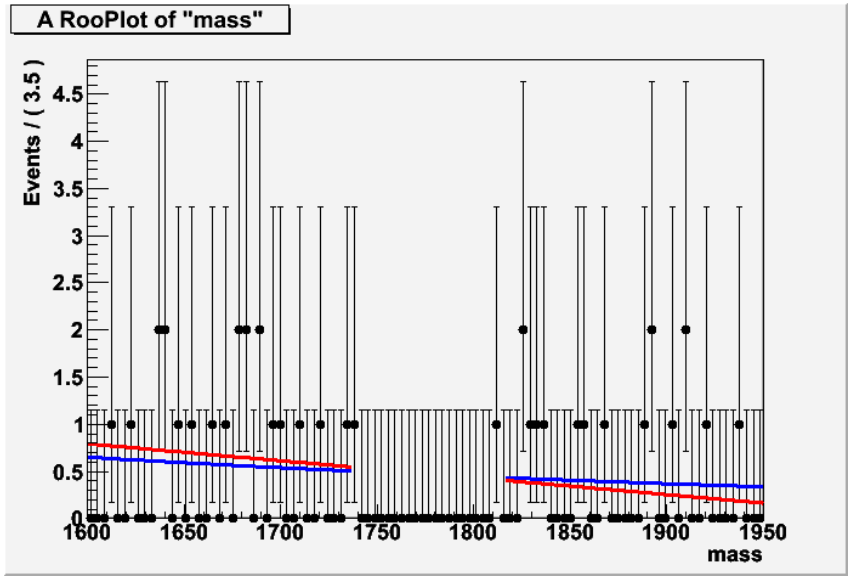


$Pid \in (0.03, 0.07),\ Geo \in (-1, 0.116)$

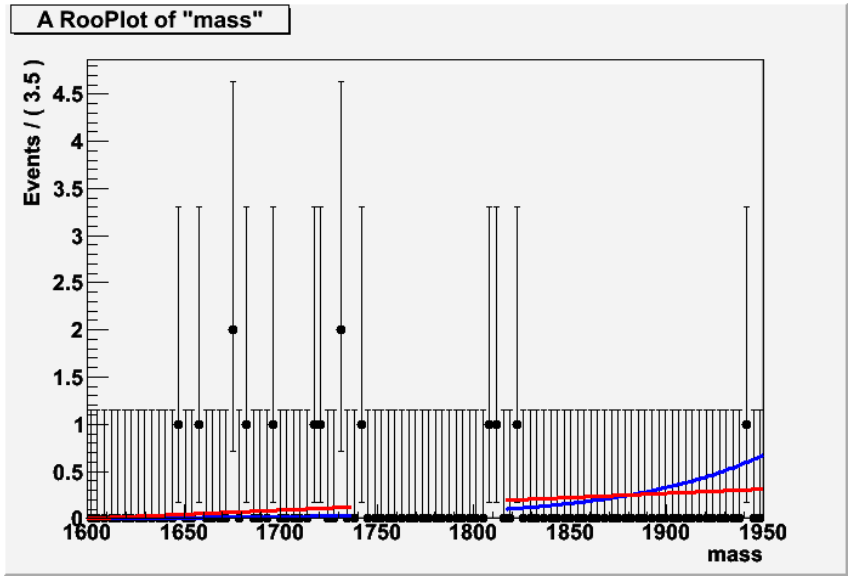
FITS

NEW PLOTS!

Exponential , Linear



$Pid \in (0.07, 1),\ Geo \in (0.116, 0.44)$

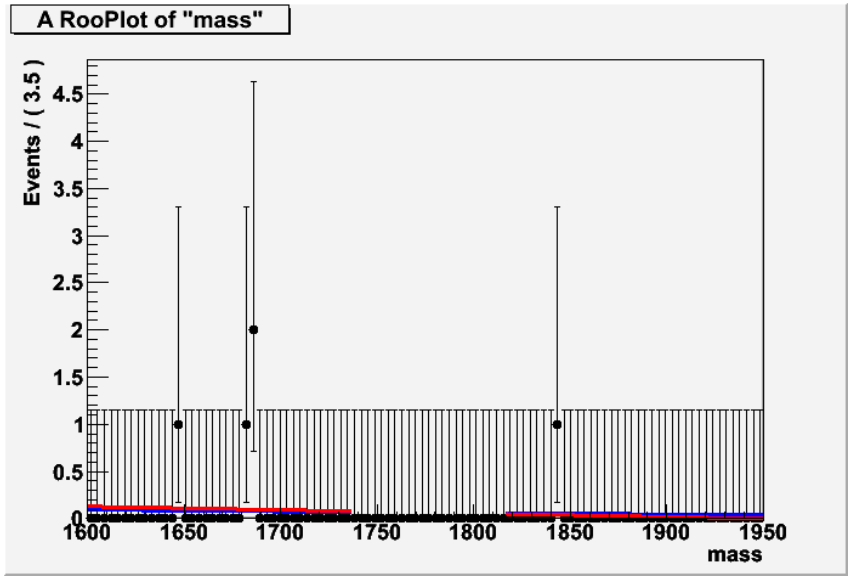


$Pid \in (0.07, 1),\ Geo \in (0.44, 0.616)$

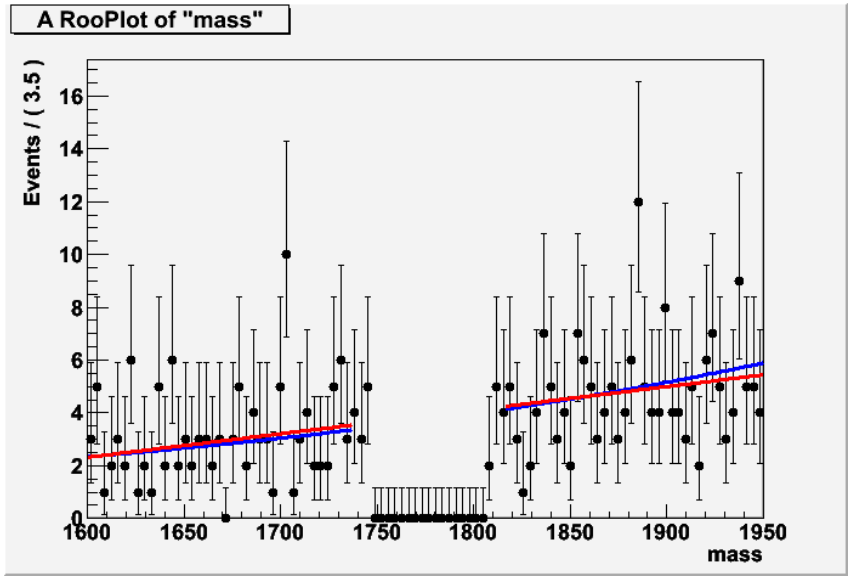
FITS

NEW PLOTS!

Exponential , Linear



$Pid \in (0.07, 1),\ Geo \in (0.616, 1)$



$Pid \in (0.07, 1),\ Geo \in (-1, 0.116)$

OLD NUMBERS!!!

Background was calculated for every region depending on the background fit.

PID	GL	Linear	Error lin	EXP	Error. Exp
0.03, 0.07	−1.0, 0.116	225.286975	3.720377	214.762667	6.453331
0.03, 0.07	0.116, 0.44	25.334704	0.730938	22.658613	3.382960
0.03, 0.07	0.440, 0.616	6.315243	0.557466	6.259470	0.429338
0.03, 0.07	0.616, 1.0	2.101699	0.879121	1.433717	1.249549
0.07, 1.0	−1.0, 0.1160	112.765871	3.022240	106.582612	4.852854
0.07, 1.0	0.116, 0.44	15.177247	0.424522	10.128789	3.232027
0.07, 1.0	0.440, 0.616	4.828111	0.422406	4.066456	1.435559
0.07, 1.0	0.616, 1.0	3.871274	1.701825	3.372127	1.346100

OLD NUMBERS!!!

Background was calculated for every region depending on the background fit.

PID	GL	Linear	Error lin	EXP	Error. Exp
$-0.03, -0.005$	$-1.0, 0.116$	612.985455	4.573560	607.080395	4.679320
$-0.03, -0.005$	$0.116, 0.44$	46.384177	1.931014	46.008803	1.470308
$-0.03, -0.005$	$0.440, 0.616$	14.350158	0.839352	11.075469	3.081886
$-0.03, -0.005$	$0.616, 1.0$	5.339882	0.935613	2.725763	1.714949
$-0.005, 0.03$	$-1.0, 0.116$	395.550331	3.384968	390.678139	4.435397
$-0.005, 0.03$	$0.116, 0.44$	40.271819	0.894326	34.112630	4.623346
$-0.005, 0.03$	$0.44, 0.616$	7.858009	0.613963	7.350912	1.218388
$-0.005, 0.03$	$0.616, 1.0$	6.566649	0.848413	5.702969	1.848043

NEW NUMBERS!!!

Background was calculated for every region depending on the background fit.

PID	GL	Linear	Error lin	EXP	Error. Exp
$-0.03, -0.005$	$-1.00, 0.116$	364.451433	6.578414	358.887887	3.854542
$-0.03, -0.005$	$0.116, 0.44$	30.721115	1.560252	30.334607	1.003437
$-0.03, -0.005$	$0.44, 0.616$	5.768744	0.169079	4.344005	1.671587
$-0.03, -0.005$	$0.616, 1.0$	2.856697	46.196577	0.834367	0.759460
$-0.005, 0.03$	$-1.00, 0.116$	236.601573	4.586996	229.479154	4.552825
$-0.005, 0.03$	$0.116, 0.44$	18.734881	0.628779	18.351992	1.257250
$-0.005, 0.03$	$0.440, 0.616$	5.208935	3432.133811	3.771128	1.521983
$-0.005, 0.03$	$0.616, 1.0$	2.474269	0.204744	1.976373	1.100765

NEW NUMBERS!!!

Background was calculated for every region depending on the background fit.

PID	GL	Linear	Error lin	EXP	Error. Exp
$0.03, 0.0700$	$-1.0, 0.116$	132.329737	3.470622	124.636453	4.678309
$0.03, 0.070$	$0.116, 0.440$	11.926013	1.241367	11.342059	1.410772
$0.030, 0.070$	$0.44, 0.616$	2.927904	0.341608	2.321587	1.105419
$0.030, 0.07$	$0.44, 0.616$	2.927904	0.341608	2.321587	1.105419
$0.07, 1.0$	$-1.0, 0.116$	66.990704	2.829629	64.333774	2.731670
$0.07, 1.0$	$0.116, 0.44$	7.995978	0.974813	7.865325	0.816167
$0.07, 1.00$	$0.44, 0.616$	3.146356	0.000000	1.206581	1.058452
$0.07, 1.0$	$0.616, 1.00$	1.020250	0.002674	0.996967	0.331870

Summary

If you have any questions, comments:
mchrzasz@cern.ch