Phi->K+K- yield in p-p collisions

For dipali – can you give us a summary as well of your analysis– is it all in the analysis note? Can you pull out the appropriate plots for a direct comparison? – the more directly we can see the comparison – the quicker we can get to the paper

For dmitri and dipali – the more you understand one another's analysis, and the clearer you are about the differences the faster things will go.

Dmitri Kotchetkov

UC Riverside

01.06.05.

Conditions

~36M MinBias events
etof > 2MeV
|zvertex| < 30 cm
|zed| <75 cm

PID cut 4s in the TOF and 2s in the PbSc
no track matching cut
quality = 31 or > 60

0.3 < mom < 1.1GeV in the PbSc
0.3 < mom < 2.2 GeV in the TOF

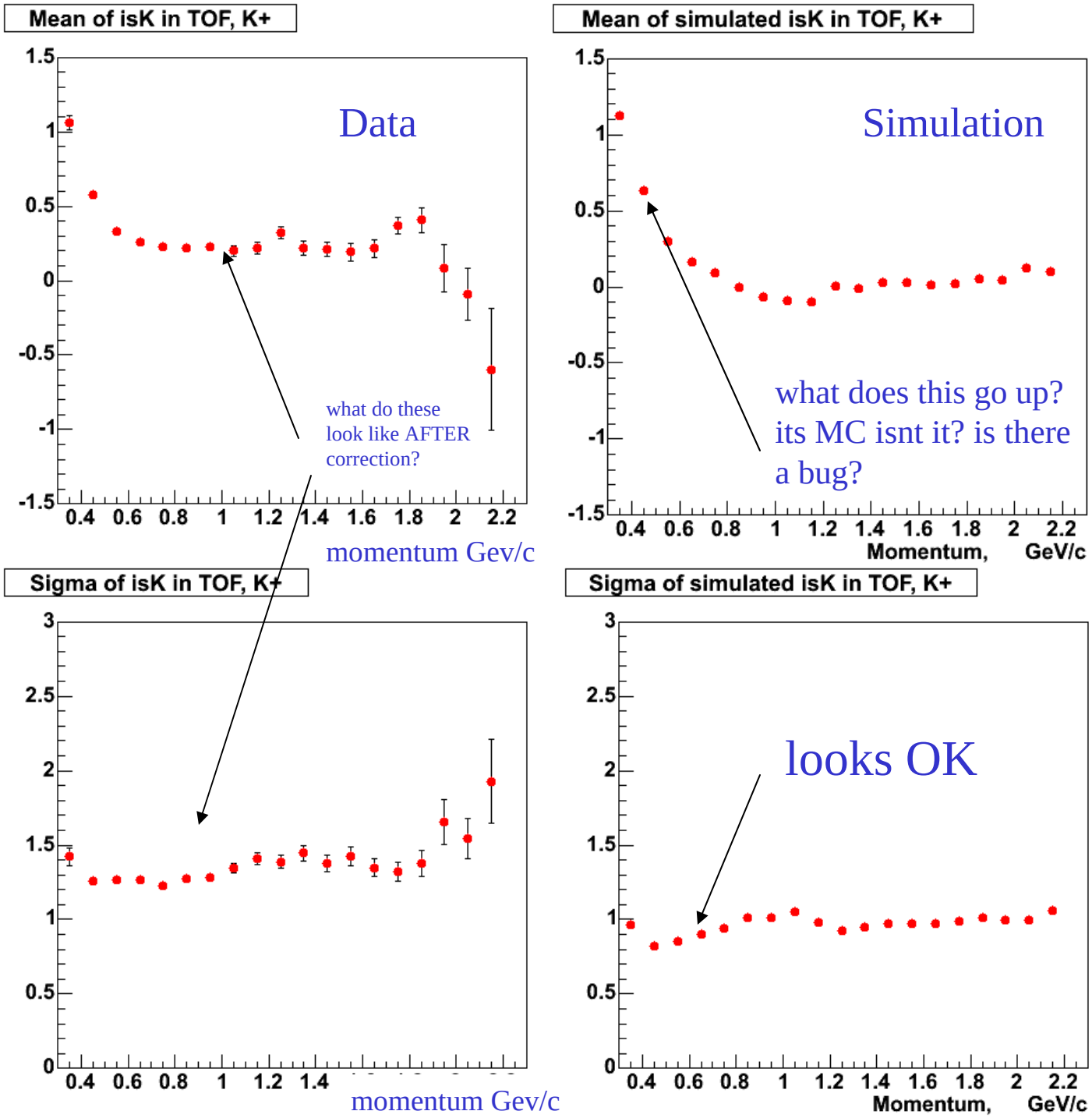
Dmitri- please explain these cuts –i.e. describe them- what is meant by 4s (Do NOT mention cuts not used in your analysis)

Dipali- can you give us a simillar table ?–

PID functions in the TOF and track matching in the TOF and PbSc need corrections

Dmitri- please describe these corrections – tell us whether it is in data, MC or both
Dipali – tell us what you did (you did not make corrections?)

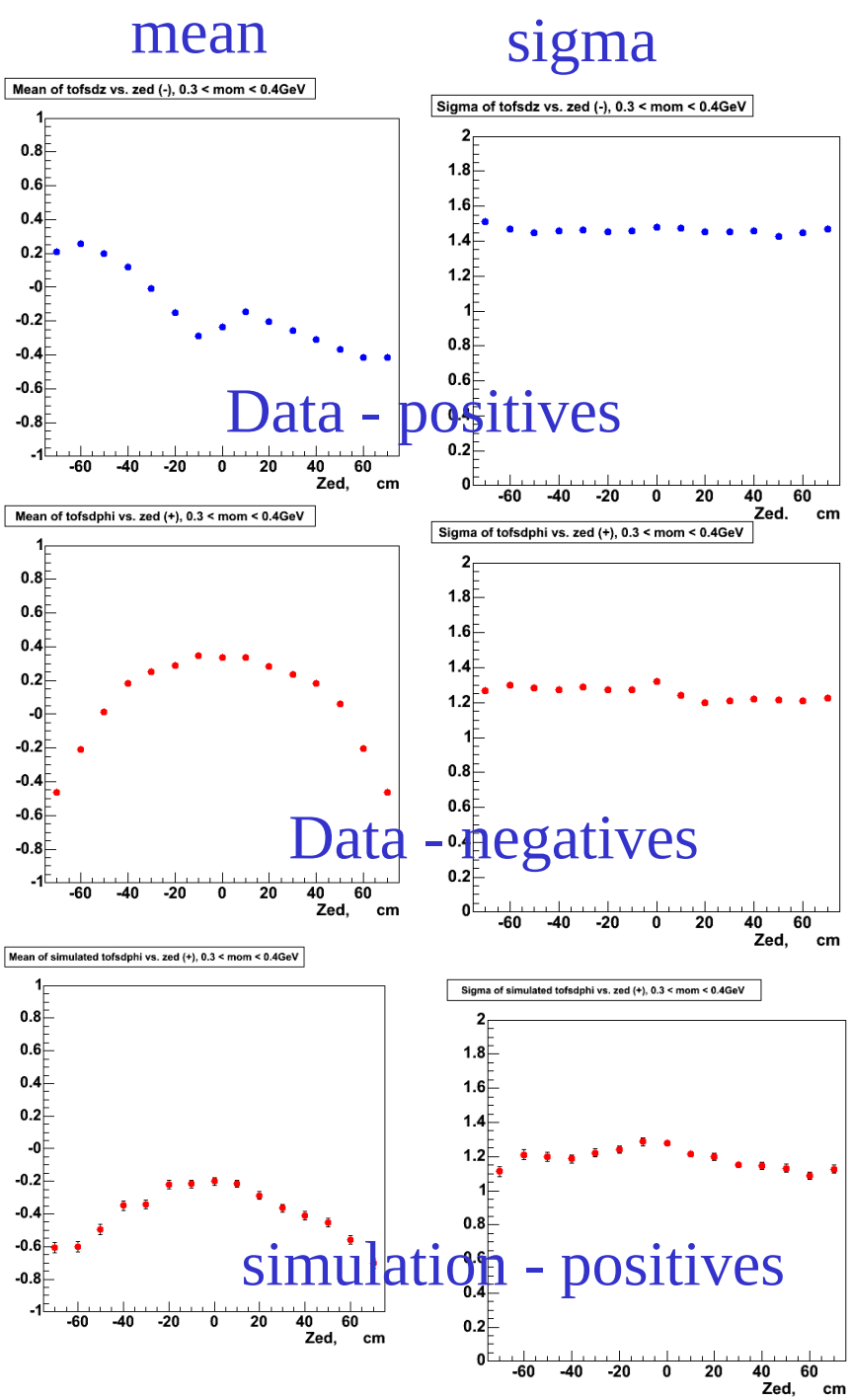
PID in TOF



Require corrections
Dmitri -1)describe these corrections.
2) Describe isK
3) for data how are kaons selected for inclusion into plot
4) for simulation what sample is used?

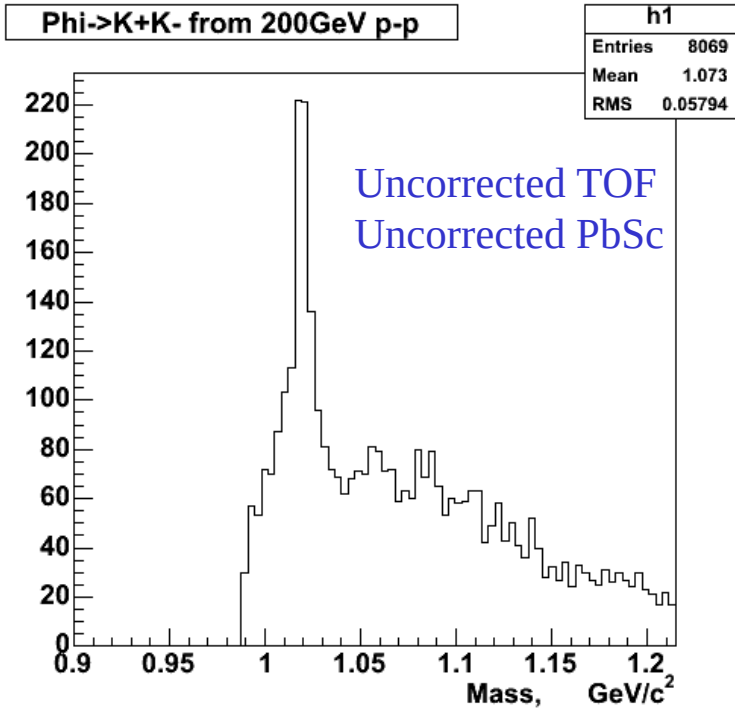
Axis label for Data is wrong, should read "mom" (fix this using power point – I did it here)

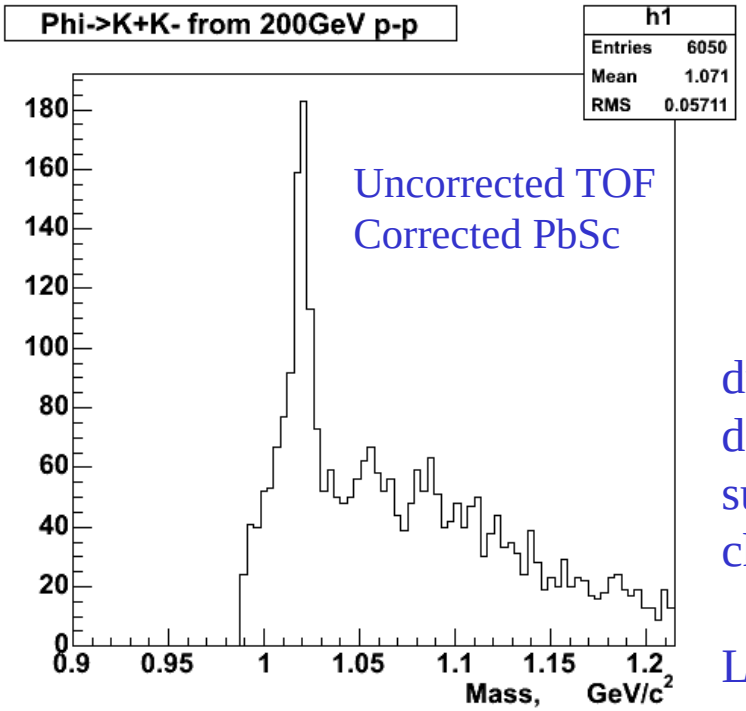
Track matchnig in TOF Tofzdz-zed .3<mom<.4

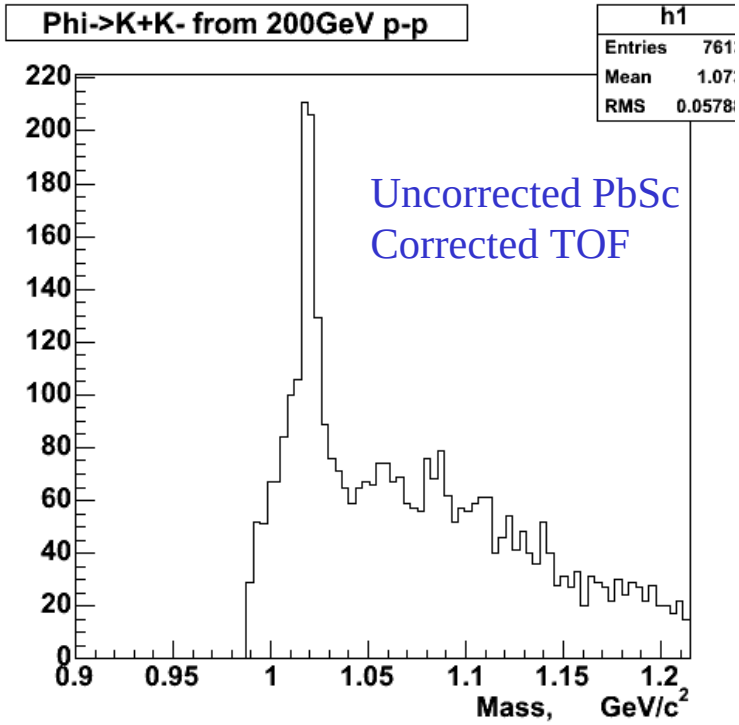


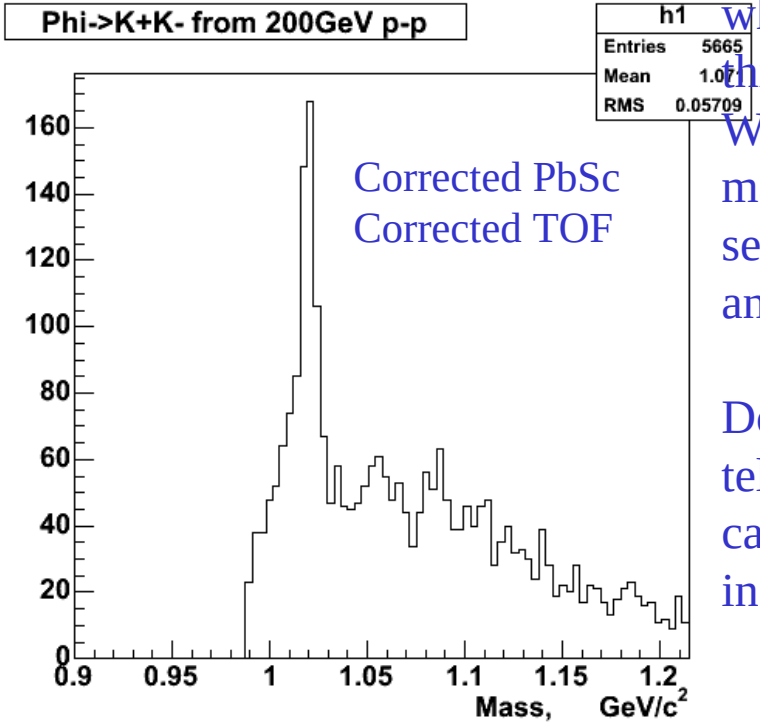
- Dmitri- see how much more clear this is – 3 slides condensed to 1
  - Are the top two sets really data and the bottom simulation? (it looks like the middle one is simulation too)
    - if so – why is the data positives so different than negatives? – what do the simulation negatives look like?
  - Did you make cuts on this
  - if so, is there a correction done?

Effect of matching cut





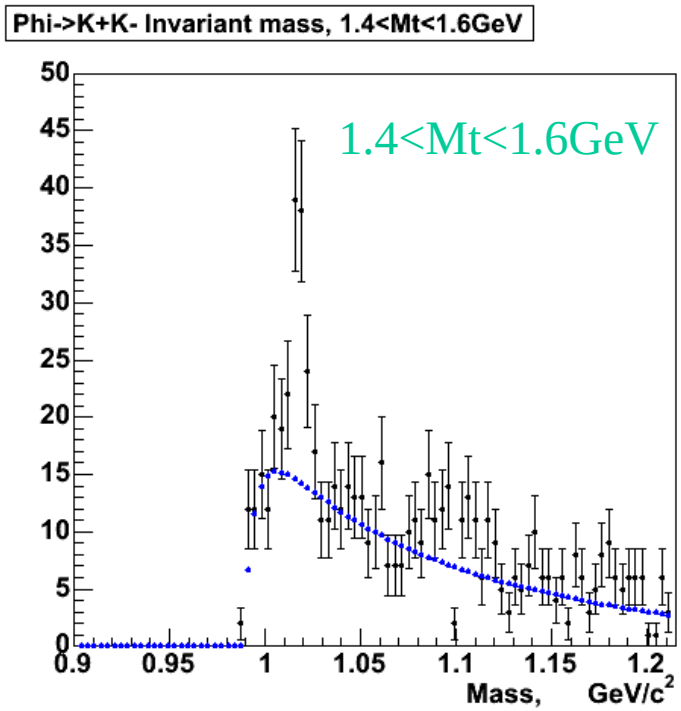


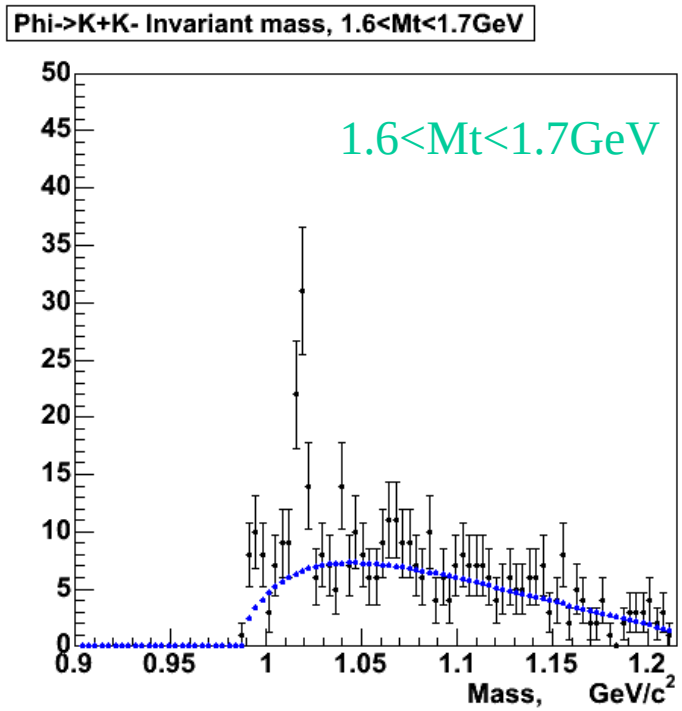


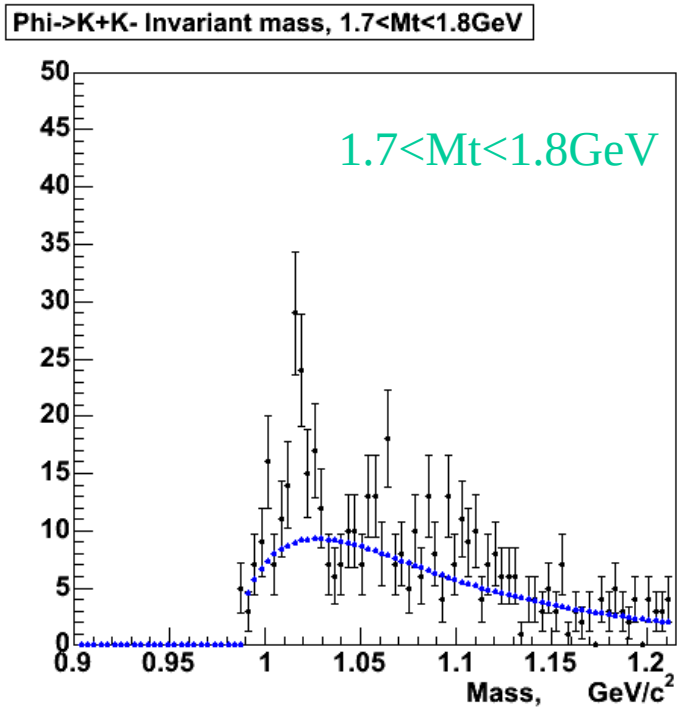
dmitri-
do a background subtraction and check the numbers

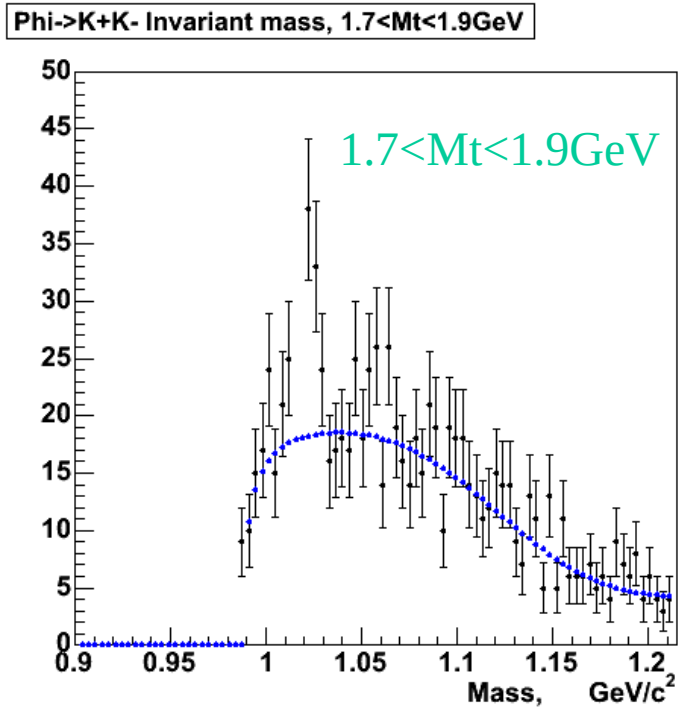
Lets figure out why there is this change
What is the matching cut set to for TOF and PbSC

Doesn't the last plot tell you that you cannot make this cut in the MC and data?





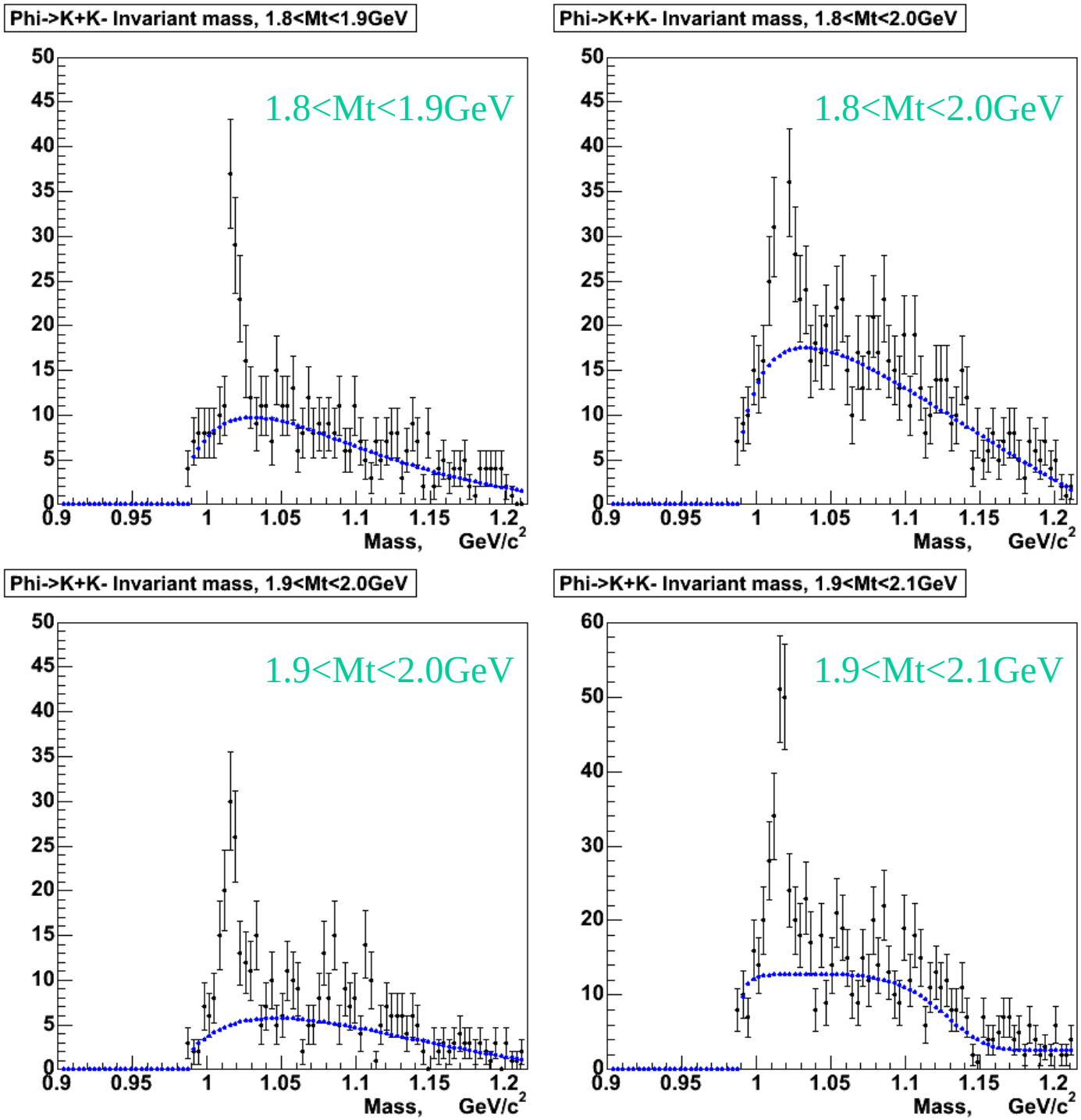




For- and Backgrounds

There is no matching cut here? we will need to see this with a simillar cut as in dAu.

Explain bkg function. Also just try Dipalis mixed event shape (maybe her peripheral) – how much does it change yield? assign systematic error from bkg subtraction



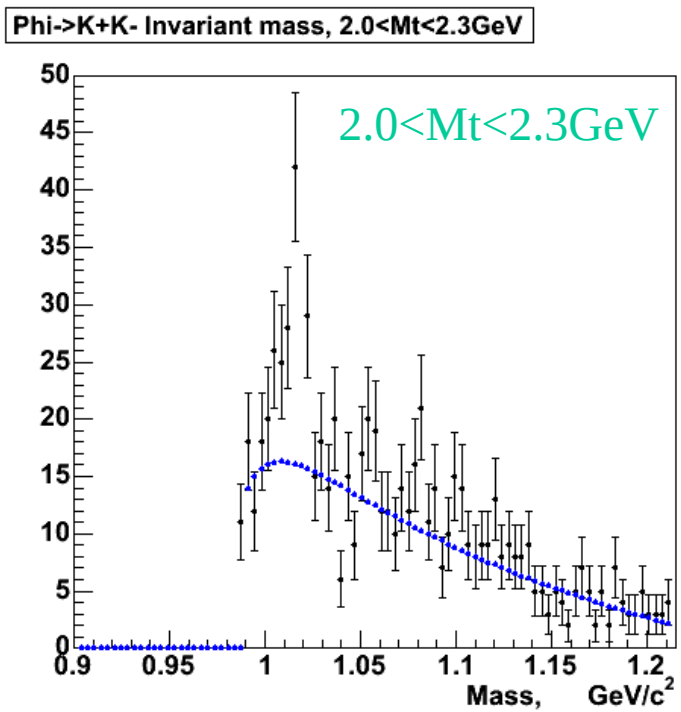
For- and Backgrounds

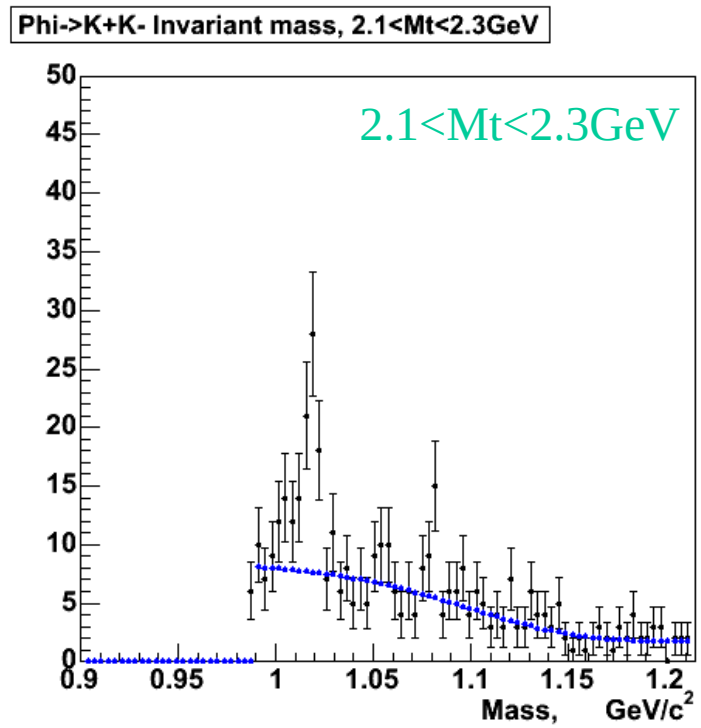
I would guess the answer to tony's question about the pt dependence of the bkg is acceptance

Phenix has a funny acceptance curve in pt

Just show it (throw flat mass 1-1.3 gev and show the acceptance curve vs pt)
Also show only the bins you actually use overlapping bins is confusing

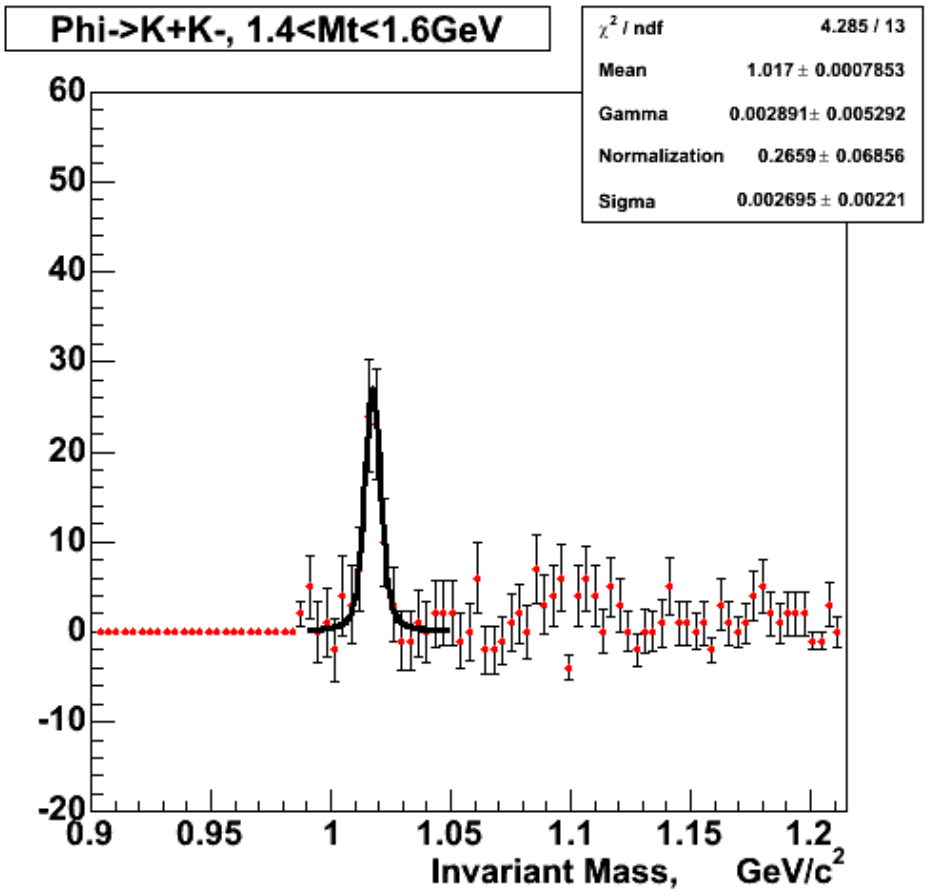
For- and Backgrounds

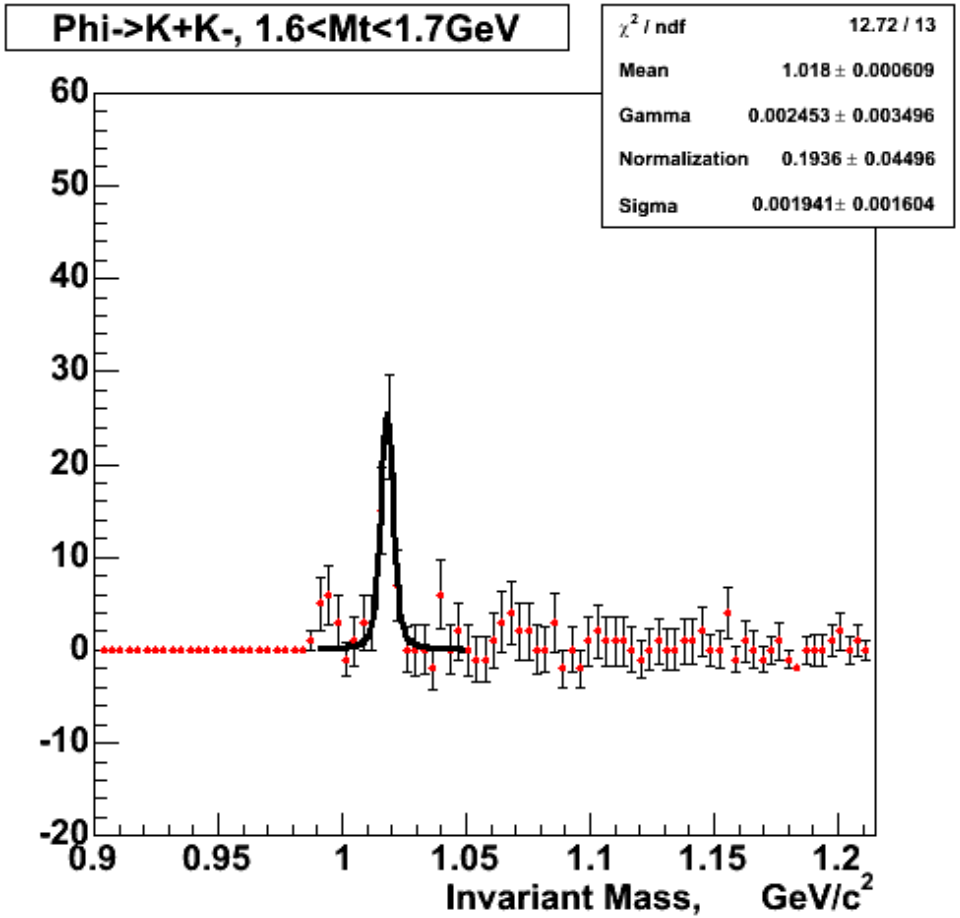




Chose: 1.4-1.6, 1.6-1.7, 1.7-1.8, 1.8-1.9, 1.9-2.1, 2.1-2.3GeV
Mass window: 0.995 – 1.045GeV
(Dmitri- change the mass window e.g. to say +- 10 MeV – again show only the bins you use)

Mass and width (1)



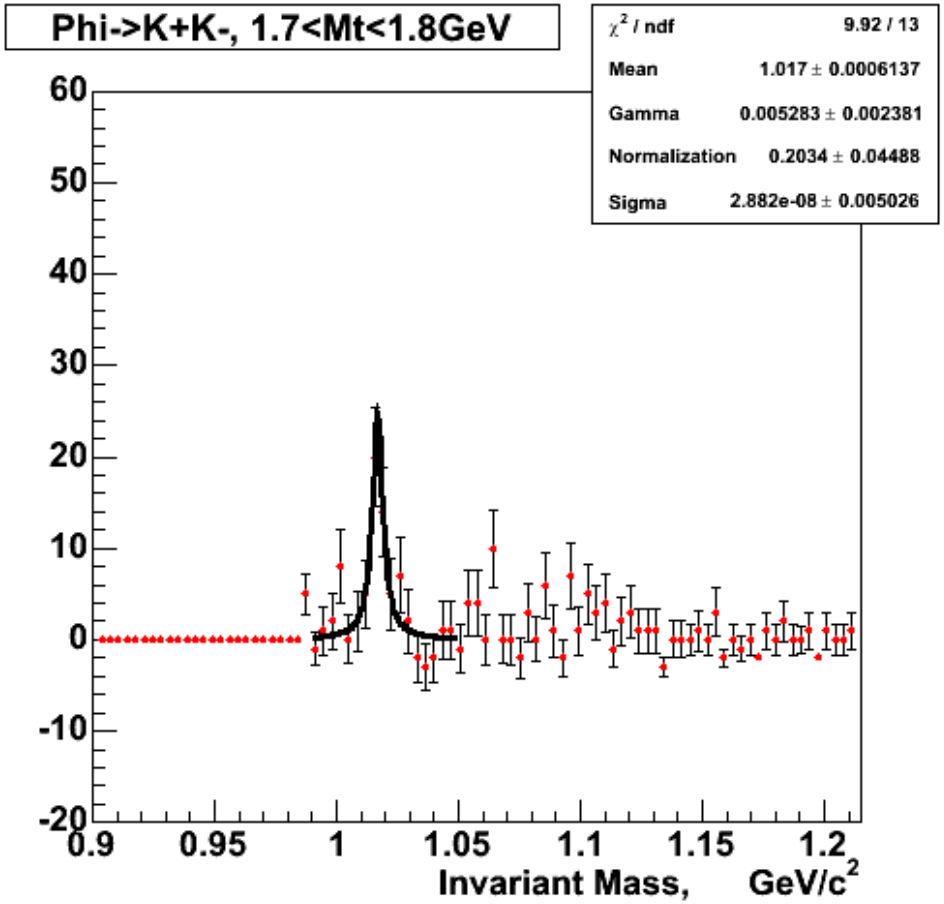


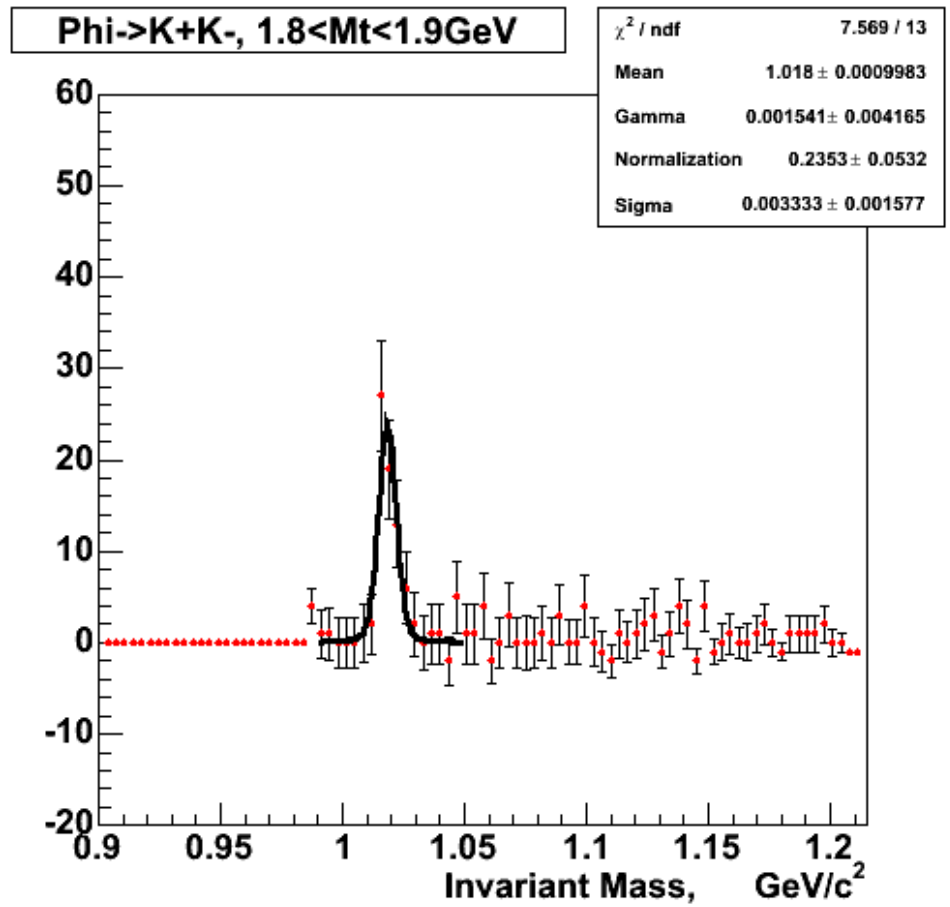
77 +/- 21 events
S/B = 0.40

62 +/- 15 events
S/B = 0.71

Dmitri –
I would hold the Gamma constant to the PDG value and let the sigma float

Mass and width (2)

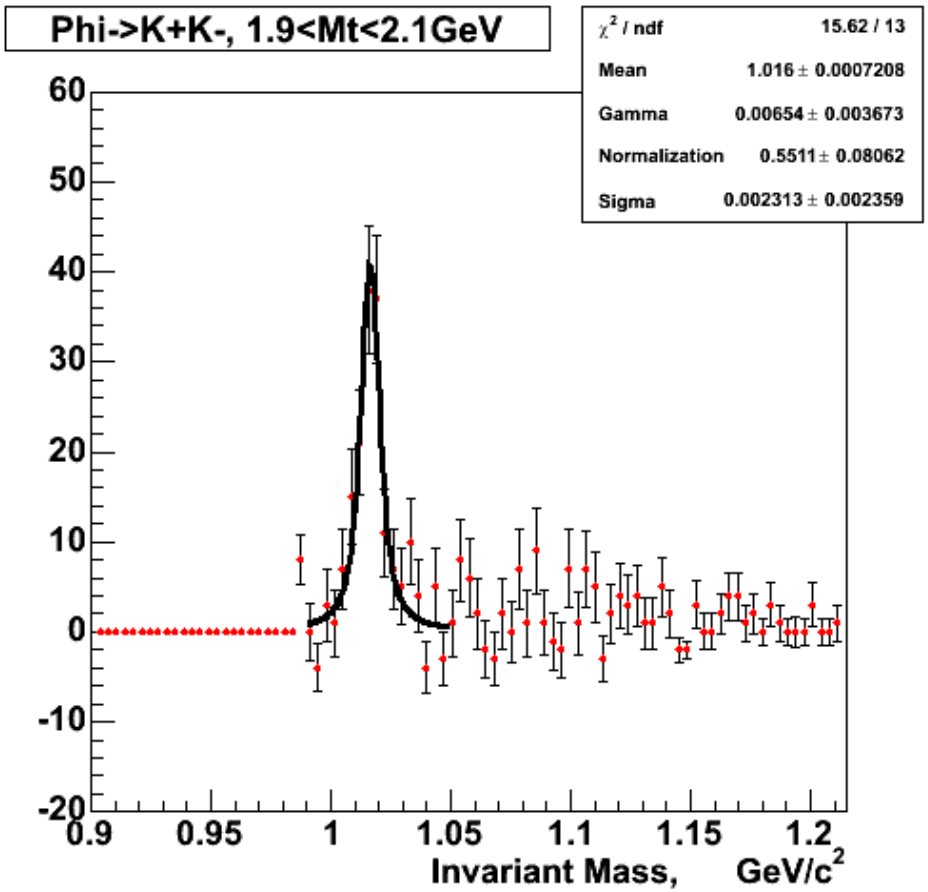


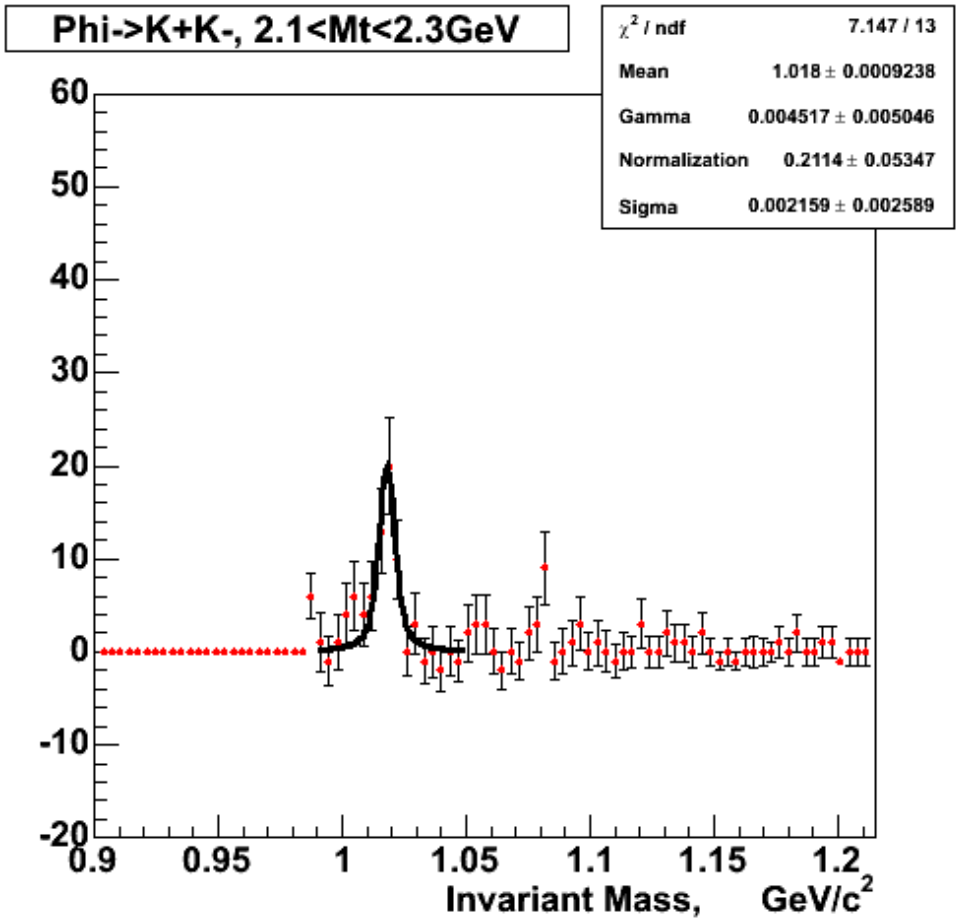


63 +/- 17 events
S/B = 0.52

73 +/- 18 events
S/B = 0.58

Mass and width (3)





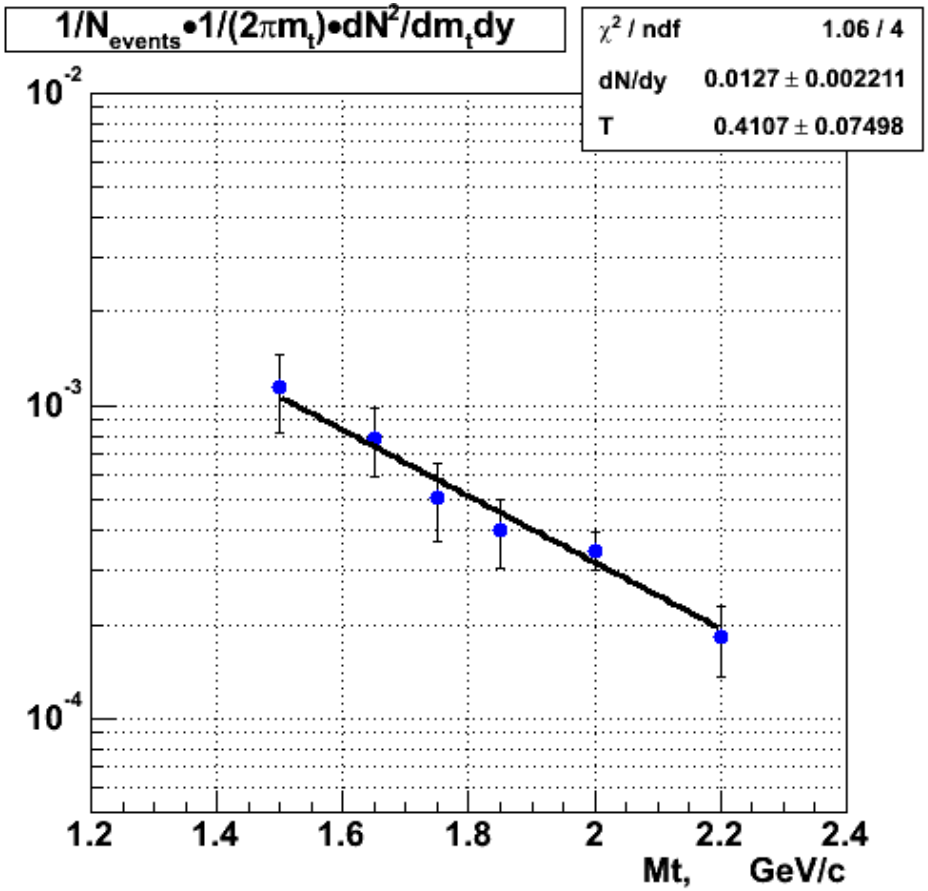
164 +/- 23 events
S/B = 0.92

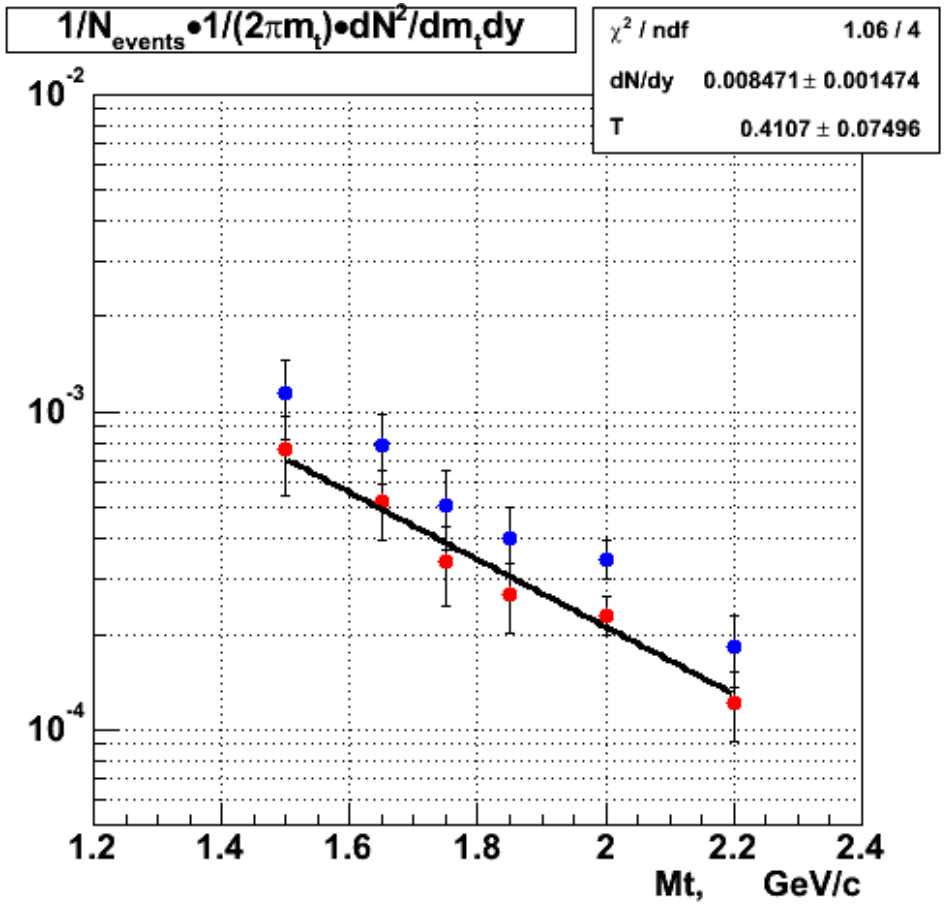
66 +/- 17 events
S/B = 0.62

perhaps these bins
could be redone to get another point?
e.g. 1.9-2. ; 2-2.15, 2.15-2.4?

- Dmitri – show acceptance plots

Mt spectra

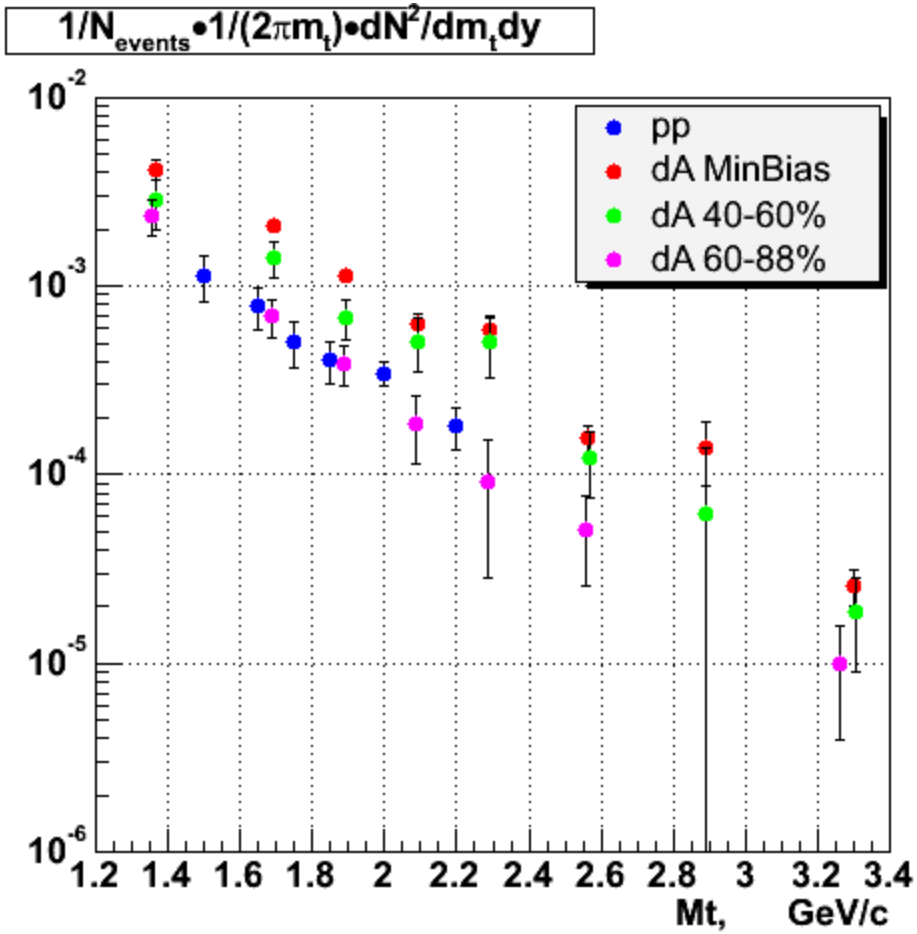




Correction factor of the BBC = 0.667 (AN210)

dmitri- So the red or blue is corrrected? WHICH DO YOU CHOOSE?

With dA results

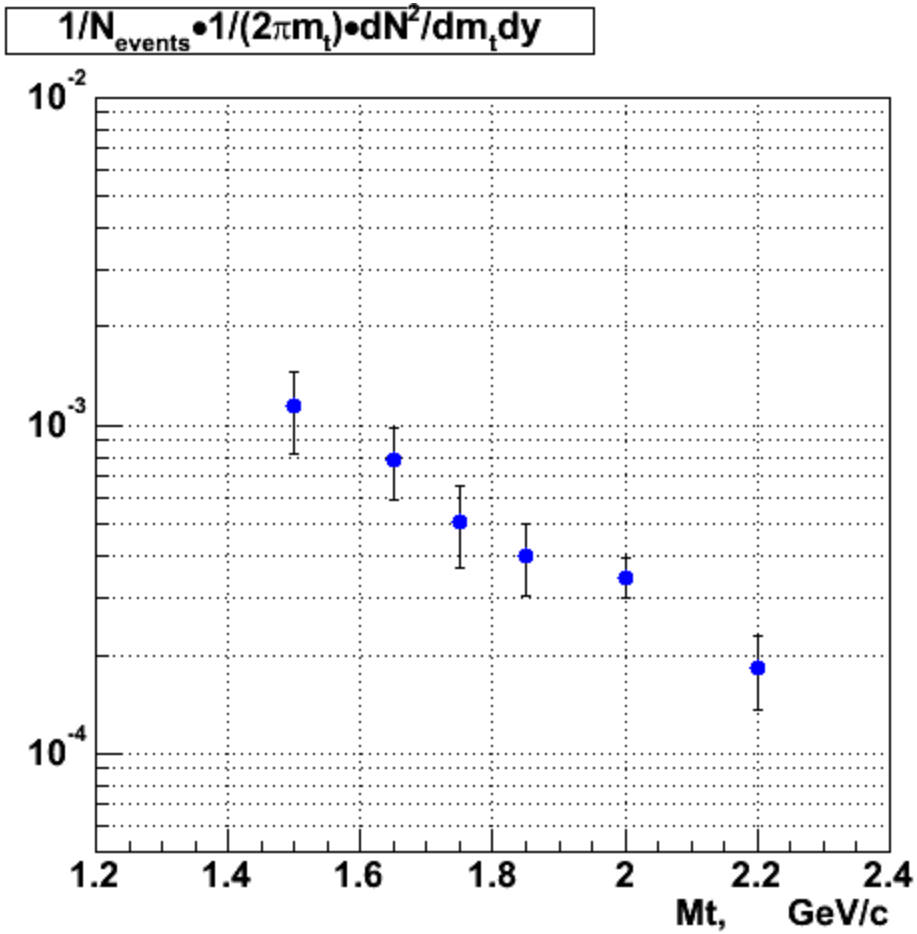


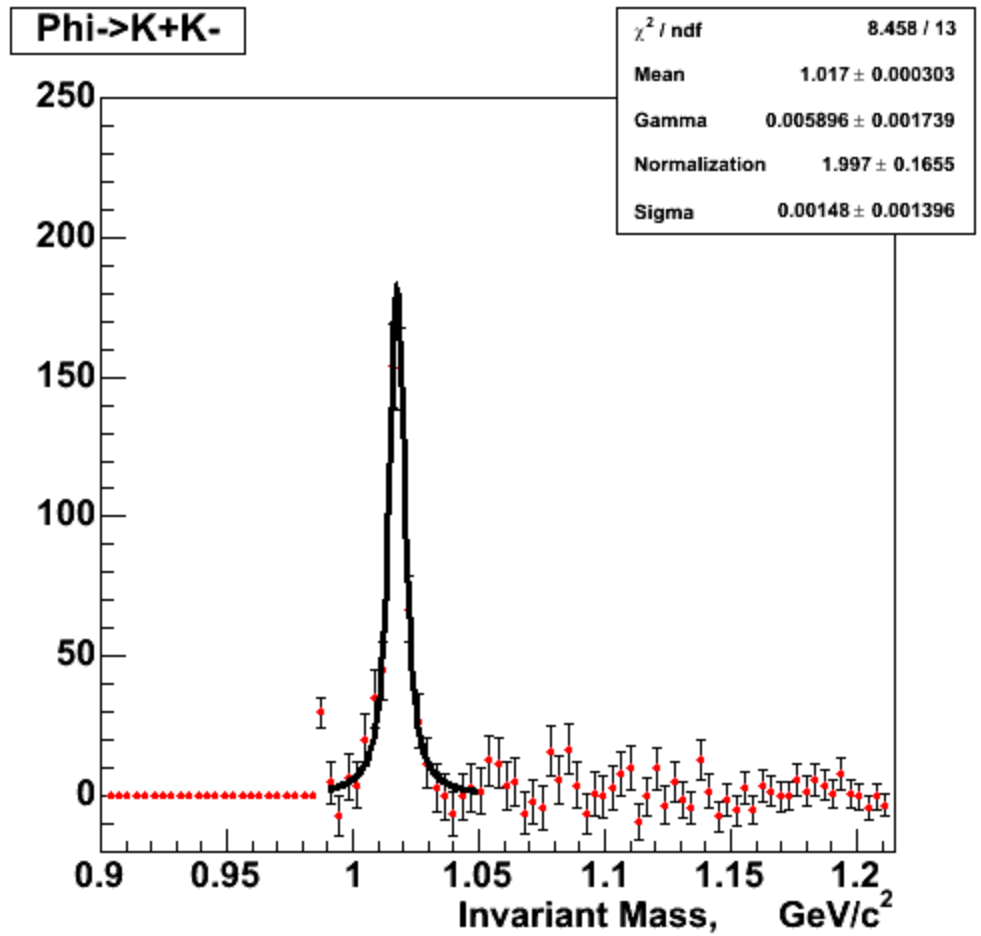
Dipali and dmitri
Are these divided
by Npart?

by using
interpolation to
the phi Au-Au points
give us a RdA!

1) for Au/pp
2) for dAu(central)/
pp and dAu(central)/
peripheral

Request for preliminary





Request for preliminary (2)

Mt spectra:

Mt	yield	stat	sys
1.4-1.6GeV	0.001139619	0.000317417	0.000040027
1.6-1.7GeV	0.000785187	0.000195253	0.000063781
1.7-1.8GeV	0.000509604	0.000141629	0.000026046
1.8-1.9GeV	0.000401929	0.000099410	0.000013440
1.9-2.1GeV	0.000344722	0.000047999	0.000022048
2.1-2.3GeV	0.000183026	0.000046144	0.000007814

dN/dy = 0.01270 +/- 0.00221 +/- 0.00124
T = 0.4107 +/- 0.0750 +/- 0.0687 GeV

Mass = 1.0174 +/- 0.0003 +/- 0.0001
Width = 0.005896 +/- 0.001739 +/- 0.000134

When dN/dy is a physics result?

1) Extract dN/dy and T in mt bins Is it a physics result

2) Using T from (1) find a position of mt point as

$$< m_t >= \frac{\int m_t \exp(-m_t / T)}{\int \exp(-m_t / T)}$$

use the center of mass of the bin -we will have to figure out how to match them with dipali's pints

what the integration step should be?

3) Is it necessary to extract dN/dy and T again? Are these physics result?

In this specific case <mt>

1.49188
1.64793
1.74793
1.84793
1.9919
2.19191

References

The draft of the analysis note (still in progress):
http://www.phenix.bnl.gov/phenix/WWW/p/draft/kotchet/phi_pp/Phi_pp_note.pdf

And its appendix:
http://www.phenix.bnl.gov/phenix/WWW/p/draft/kotchet/phi_pp/Phi_pp_appendix.pdf

Right now the systematic error is found only from 2 sources (mass window for the yield and PID variation), likely some more will be added

Dmtri – you need to show the separarate contributions
of the systematic error in a table
and then for each tell us why you assign a specific value
to a particular source
e.g. Run-by-Run QA for isK