Subject: Re: Tracking: Kalman Task with STT,(electron hypo)
Posted by Lia Lavezzi on Thu, 23 Dec 2010 20:54:44 GMT
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Hi Soeren,
   sorry for the late reply. I tested the macros without the added Urban, i.e. setting the value of gcalpha = 1 in Geane.C.

In the reconstruction of the electron as a muon nothing changes, while the distribution and the pull of the electron reconstructed as an electron changes:

The momentum distribution is much more similar to the one reconstructed as a muon, but the pull distribution is not good.
It seems that the reason for the electron behaviour is indeed the Urban model correction, but the shape of the momentum distribution and the pull distribution are better with the Urban correction, though the peak is larger.

Answering also to Stefano:
Quote:I still do not understand; let's forget about the tails, for the moment:

Muon: p_rec - p_mc narrower, p_rec - p_mv / sigma broader
EWlectrons: p_rec - p_mc broader, p_rec - p_mc / sigma narrower

->
Muons: sigma smaller
Electrons: sigma bigger

Muons have a better residulas, but small errors (why?)
Electrons have larger residuals, and larger errors.

I would suppose that errors for muons should be larger, and also the residuals, considering that this is the wrong hypothesis. Electrons should fit better the points, with a reduced residual and properly calculated errors. But this does not appear.

I continue to think that there is something wrong somewhere for electrons.
the errors are smaller for the muons because the bremsstrahlung contribution is not taken into account, while it is for the electron.
The point is that here we are considering the kalman fitted result, so a different error means also a different result when you compare the extrapolated error to the measured hit one. Then if you have different errors, you get different results after the filtering step and then different momentum distributions. The momentum itself does not come only from the extrapolation of the mean value.
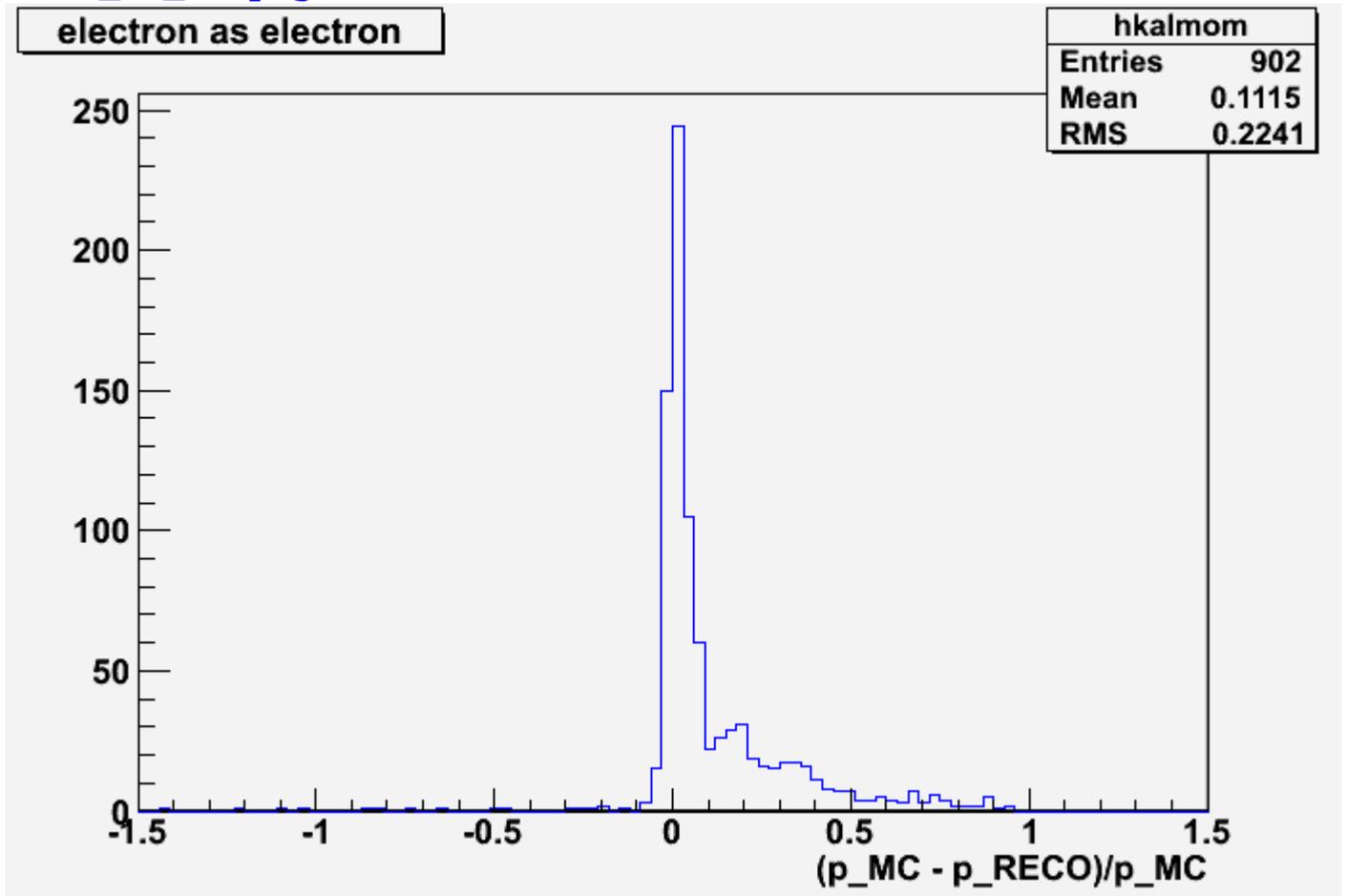To understand completely the GEANE contribution, I think we should consider the pull distribution just after an extrapolation, without the kalman procedure, maybe just extrapolating the tracks on a plane, taking as starting momentum and position the MC ones.
                Regards,
                  Lia.

File Attachments

electron as electron

hkalmom	
Entries	902
Mean	0.1115
RMS	0.2241

$(p\_MC - p\_RECO)/p\_MC$

electron as electron

hkalmom	
Entries	902
Mean	0.7162
RMS	1.652

(p_MC - p_RECO)/sigma_RECO