Subject: Re: Problem with mass constraint fit for two gamma
Posted by Dima Melnychuk on Tue, 01 Jul 2014 09:06:49 GMT
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Hi Donghee,

The EMC error matrix is accessed via class /emc/EmcReco/PndEmcErrorMatrix.cxx and it is used in PndPidCorrelator to actually set error matrix for neutral candidates. The parameters used in this parametrization are stored in /input/emc_error_matrix_default.root and /input/emc_error_matrix_1.root

Error matrix is parametrized on energy and position of the cluster with independent parametrizations for Barrel Forward and Backward endcaps. I have attached the presentation from Mark Pelizaeus (I hope he does not mind) who did it in old framework and I adapted it for pandaroot. I remember he had another presentation on the subject but I cannot find it now.

emc_error_matrix_default.root contain parameters obtained by Marc in old framework and in emc_error_matrix_1.root there are parameters which I calculated for one emc geometry ("emc_module12.dat","emc_module3new.root","emc_module4_StraightGeo24.4.root ","emc_module5_fsc.root"), but it is not exactly the one used by default now. For forward endcap it was modified to "emc_module3_2012_new.root".

There are several macros related to emc error matrix in /macro/emc/dedicated/

error_matrix_data_production.C - produces photons in the whole emc range to calculate error matrices
error_matrix_fit.C - to actually calculate error matrices, fit them, and store parameters in PndEmcErrorMatrixParObject containers.
fill_error_matrix_param.C - to fill PndEmcErrorMatrixParObject container with given parameters.

I just found that in PndEmcErrorMatrix.cxx the emc_error_matrix_default.root was used and not emc_error_matrix_1.root for default geometry and I will correct it now (within one hour) and you can try if this can solve the problem.

Otherwise it makes sense to start with some QA macros to test pull distribution of pi0 before and after 4C-fit as suggested in Mark's presentation and if there is actually a problem with error matrices, to produce photons, re-calculate error matrices, parametrize them and test again.

Dima

File Attachments

1) M.Pelizaeus, emccov_4cfit_pbm.pdf, downloaded 576 times