Subject: DIRC preshower
Posted by kamalpdutta on Thu, 14 May 2015 05:58:52 GMT
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Dear all,
In EMC TDR, section 9.2.1 describes the study of DIRC preshower. I am trying to reproduce the same, but having problem. Anyone please provide me details of this work. Thank you.

regards
Kamal Dutta

Subject: Re: DIRC preshower
Posted by Bertram Kopf on Mon, 18 May 2015 16:07:07 GMT
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Dear Kamal Dutta,
the results of the DIRC preshower studies are based on the old BaBar-like offline software. I think that the geometry of the DIRC as well as of the EMC was a slightly different compared to the present ones implemented in PandaRoot right now. For these old studies single photons have been generated homogeneously in the theta-range between 22 and 145 degrees. We identified the DIRC preshowers via the terminal vertex position of the primary photon of the GEANT4 track. In case that the terminal vertex position was located within the DIRC bar this photon was assigned to a preshower. Then the corresponding EMC cluster has been identified with the track matching to this primary photon.
What is the problem in your case?

With best regards,
Bertram.

Subject: Re: DIRC preshower
Posted by kamalpdutta on Mon, 18 May 2015 18:47:17 GMT
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Hi,
Thanks for your reply. In my case too, I have generated single photon events for energy 1 GeV originates just before DIRC (45,0,0) using box generator. The starting point of the EM shower has been identified from the starting vertices of secondary particles. The minimum of radial part (sqrt(x^2 + y^2) of the starting vertices of secondaries is taken as the radial distance of the starting point of the EM shower for each event. The gamma conversion probability is calculated as (number of gamma starts EM shower within DIRC)/ (number of generated gamma). To reproduce the figure 9.13 (EMC tdr), this process has been iterates over different values of theta (from 22 to 140) and the gamma conversion probability has been plotted Vs theta. I attached the plot here.

Moreover I am not able to match EMC cluters with the primary photons.

regards'

File Attachments

1) gamvstheta.eps, downloaded 1095 times