Subject: Tracking energy cut
Posted by paloma_df on Wed, 06 Jul 2016 11:35:38 GMT
View Forum Message <> Reply to Message

While trying to find the efficiency for gammas, (p,pn) and (p,2p) reactions, I found that the values were not compatible with the previous ones when using the R3BRoot last dev version. These values show an efficiency too large with respect to previous simulations and difficult to believe in Crystal Ball. After some research, it was found together with Pablo Cabanelas and Héctor Álvarez Polt hat in a commit from the 17th of November 2015 the function SetSpecialPhysicsCuts() for the Crystal Ball detector was included. For all the particles, a cut of 0.01 GeV was introduced, so 10 MeV. The meaning of this cut is the following: every time a particle should be created as a secondary, it is only created and propagated if its energy is above 10 MeV; otherwise, the corresponding energy is deposited locally. In this case, it is pretty obvious that this cut is too high and that the efficiency values that we will get will be overestimated because the energy won't go to the neighbor crystals. The purpose was then to find out which would be a good cut.

I run different simulations varying only the energy cut and letting constant the other features and I studied different observables to find out which was the right value for the cut. After this study, I have concluded that something below 1 MeV should keep us safe. Héctor will send a commit soon with the chosen cut.

Please find attached a small report about this issue and do not hesitate to send me your comments/questions/suggestions. I did not want to make the report so large, so I skipped many things trying to put the most remarkable results

File Attachments

1) simulations_TrackingCuts_06072016.pdf, downloaded 359 times