
Subject: Re: Efficiency reduction of antiprotons above 20 degrees

Posted by [Stefan Pflueger](#) on Tue, 02 Dec 2014 16:37:03 GMT

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Hi Karin,

ok I first of all, you are simulating protons and pbars with the box generator in a theta angular range from 0 to 50, correct? Then it looks like you generated 10k events in each scenario (non shifted and shifted IP in z by 20cm) and calculated the efficiency number of reconstructed tracks / 10k. As a small side remark, I would like to point out that the box generator does not generate events isotropically, but merely uniform in theta and phi. This generates a peak in the forward direction (theta=0) as the box generator uniformly distributes particles in a grid in theta and phi. However in spherical coordinates the angular elements mapped from your theta and phi plane become much smaller closer to the z axis (small theta), or to be more precise by a factor of $\sin(\theta)$.

Now I looked at the 2GeV pictures for both scenarios. I'm not really sure how the global panda tracking works in detail, but at low angles your efficiency seems to be rather equal for both cases. Then the inefficiency at 8 degrees moves up to about 12 degrees which could be some kind of gap between the target and forward spectrometer. Above that your efficiency eventually breaks down, which could be related to the MVD which you miss completely when shifting the IP +20cm. Afaik MVD extends to roughly 23cm. I'm not sure if target spectrometer tracks require mvd hits or something like that. But since you have different mappings of the angular regions onto your detector for both cases, I think its quite difficult to make statements...

Cheers,

Stefan
