

Hi,

first of all, I suppose you are using tpc and not stt. Please correct me if you are using stt macros.

The problem appears probably because you are hitting particles at very back angles. where the detector is not well performant for tracking (and where we expect very few tracks).

If you see the first plot, starting from 0,0,0, you can see that the code does not reconstruct tracks with $\theta > 155^\circ$, due mainly to the detector geometry (not enough points to reconstruct the track).

While in the first plot you see a sharp cut, once you smear the vertex in -10, 10, of course the corresponding emission angle will be different, then the sharp cut becomes smooth around 155° (you expect that tracks at -10 cm will suffer the cut at θ a bit lower than 155° , while for tracks at +10mm the acceptance should increase a bit at θ more than 155° , but this is a small effect. And the tracking is still fine.

In the third plot, first of all the hole is not connected to EMC, because emc are not used for tracking. Probably at some particular angle there is some geometry effect from the pipe, and then simply tracks are scattered and not reconstructed properly. However, I am quite surprised that you reconstruct up to 160° , apart from the hole due probably to pipe material (if I remember well the back part is not titanium anymore but steel).

Then, it seems there is nothing so awful in the back tracking, or at least it does not appear from the plot.

My question is now, do we really expect particles at $\theta < 150^\circ$? These should be quite rare events, isn't it?