Subject: Re: Pions decays in detector
Posted by Radoslaw Karabowicz on Fri, 18 Oct 2019 11:09:49 GMT
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Dear Anna! Dear Andrei,

you are simulating 1 GeV/c pions. When I was studying physics, these would be called highly relativistic pions. I _did_ the calculation for you, I haven't done this exercise in years, so I hope I didn't do some stupid mistake.
p = 1GeV/c
m = 141MeV/c^2
tau = 2.6e-8 s
From p = gamma(v) * m * v
I get v ~= 0.98995c
and gamma(v) ~= 7
Hence the mean length of a 1GeV/c pion is:
length = gamma(v) x v x tau ~= 7 x c * tau = 7 x 7.8m ~= 50m

If you want to see more decays, LOWER the energy of the pion.