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Subject: MC-truth match in a 7-photon final state  
Posted by [Christian Will](#) on Fri, 28 Sep 2018 11:22:13 GMT  
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Dear all,

I am doing simulations of a decay tree including a hybrid candidate which has 7 photons (and an  $e^+e^-$  pair) as final state. As you may know, in the current PandaRoot implementation there is quite a high probability that a photon interacts (compton-scattering, pair-production, ...) before it creates an electromagnetic shower in the EMC. As a result, in my channel only in a tiny fraction of events none of the seven photons have interacted before showering. This is problematic for me because when I check my reconstructed hybrid candidate for Monte-Carlo truth matches, the number of MC-matches is very low. I currently assume(!) that the low number of MC-matches is caused by the fact that when one of the photons interacts before showering, the reconstructed decay tree does not match the decay tree for my hybrid candidate and the MC-match returns "false". This leads to the problem that I can't optimize my parameters because I can't determine what is signal and what is background properly.

Has anyone experienced similar issues and found a workaround or can at least confirm my assumption about the MC-matching?

Cheers,  
Christian  
(Giessen University, Germany)

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