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Subject: How can I add particles to the simulation after a particle was stopped?  
Posted by [m.steinen](#) on Tue, 06 Dec 2022 16:23:33 GMT

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Hi all,

I have a question about adding particles during the simulation in PandaRoot (Geant4) and maybe someone can help me because I'm trying this for a few days without success.

Let me describe the situation first: For the simulations of the hyperatom experiment we first create the  $\Xi^-$  in our primary target (in the simulation these are created by a generator) and stop the  $\Xi^-$  in an absorber. At this point the hyperatom might then be formed in an excited state and we will study it decaying to its atomic "ground state" (mostly emitting X-rays).

In the past we did these simulations in 2 steps:

- 1) Simulate the  $\Xi^-$  and store the stopping point.
- 2) Use the stopping point as start vertex for a second simulation and create the X-rays and stuff in here.

This was feasible for all the studies I did in the past but now we want to combine both steps into a single simulation and this is the point of my problem. How can I add new particles during a "running" event to the stack of particles that need to be tracked? I don't think that I can use/create a new primary generator due to the restriction that these "secondaries" should only appear for stopped  $\Xi^-$ .

I tried multiple options until now but none of them seemed to work:

- 1) `FairPrimaryGenerator::AddTrack(...)` <--- as far as I understood this only works during the initialization phase of a new event when the primary particles are generated
- 2) `PndStack::PushTrack(...)` <-- This should add a particle to the stack of particles that should be tracked (`AddTrack(...)` also calls this function)

It seems to me that the stacksize of particles to be tracked does not increase in both ways (I also tried to add `PndStack::PopNextTrack(...)` without success).

Does anyone know how to do this properly or is there another way?

Greetings,  
Marcell

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