Subject: [CLOSED] Turning ON/OFF Models
Posted by Michael Kunkel on Tue, 03 Apr 2012 17:57:34 GMT
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Greetings again,

I use PLUTO for simulating eta dalitz decays produced via photoproduction on a liquid hydrogen target (gamma p -> p eta [e+e-gamma]). I ensure that I use a beam profile of a 1/E(gamma) in the simulation, however the reconstructed parameters do not match the data.

So what I would like to do is use the data itself as the initial parameters and have PLUTO decay the eta via dalitz decay, ie event by event use the parameters:
Photon Beam Energy (0, 0, E, E)
Target
Proton "myproton = P3M(px,py,pz,mass);"
Eta "myEta = P3M(etapx,etapy,etapz,etamass);"
then use
PReaction my_reaction("Beam_Energy","g","p","myproton myeta [dilepton [e+ e-] g]","eta_data_simulate",1,0,0,0);

Is it possible, since these variables are from data, to only have the eta dalitz physics operational when running PLUTO?

Thanks
Michael

Subject: Re: Turning ON/OFF Models
Posted by Michael Kunkel on Wed, 11 Apr 2012 18:04:54 GMT
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I apologize for this post, I should have re-read Section 6 of the users manual.

However this now leads me to another question. I see how to turn off/on the physics, but how to change the parameters of the physics. For instance, I am concerned with the form factor of the eta dalitz. I see in the PData.cc that I can flag QED = 1, but how do I accomplish this?

Subject: Re: Turning ON/OFF Models
Posted by Ingo Froehlich on Thu, 12 Apr 2012 05:42:00 GMT
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Sorry for the late anwer (HADES beam time and easter...)

Michael Kunkel wrote on Tue, 03 April 2012 19:57
So what I would like to do is use the data itself as the initial parameters and have PLUTO decay the eta via dalitz decay, ie event by event use the parameters:
Photon Beam Energy (0, 0, E, E)
Target
Proton "myproton = P3M(px,py,pz,mass);"

Eta "myEta = P3M(etapx,etapy,etapz,etamass);"
then use
PReaction my_reaction("Beam_Energy","g","p","myproton myeta [dilepton [e+ e-] g]","eta_data_simulate",1,0,0,0);

Yes, this will indeed not work. "myproton" is in this case an object, whereas the decay string in PReaction uses the names of the particles in the data base. The only way to access the beam particle in the event loop is to go via the composite like [p+p] or [g+p].

Btw. for additional information I added the slides of a talk (new features in v5.37) on the main Pluto page, it also contains some examples.

Michael Kunkel wrote on Wed, 11 April 2012 20:04
I However this now leads me to another question. I see how to turn off/on the physics, but how to change the parameters of the physics. For instance, I am concerned with the form factor of the eta dalitz. I see in the PData.cc that I can flag QED = 1, but how do I accomplish this?

In this case one can either switch off all form factors with the following command:

((PDalitzDecay *)makeDistributionManager()->GetDistribution("eta_dalitz"))->SetUseQED(1);

or even replace the form factor by a self-defined model (see p. 26 of the talk mentioned above), e.g.:

PSimpleVMDFF *ff = new PSimpleVMDFF("vmd_ff_dd@w_to_dilepton_pi0/formfactor","VMD form factor",-1);
ff->AddEquation("_ff2 = 0.17918225/((0.4225- _q2)*(0.4225- _q2) + 0.000676)");
makeDistributionManager()->Add(ff);

PReaction my_reaction("2.2","p","p","p p w [dilepton [e+ e-] pi0]");
my_reaction.Print();

(its for the omega Dalitz, but the syntax applies to all Dalitz decays)

Subject: Re: Turning ON/OFF Models
Posted by Michael Kunkel on Thu, 12 Apr 2012 17:24:49 GMT
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Thank You! The slides are very helpful.
