Subject: Some comments on the rho->ee decay
Posted by Ingo Fröhlich on Tue, 29 Nov 2011 12:41:37 GMT
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Only some comments to the decay of rho0 to e+e-, because there was a lot of confusion about that and people complaint "please bring back my old rho shape!"

I should point out, that I never delete anything in Pluto. The idea of having a framework (not an event generator) is to be open for all the different models.

You can see this by typing

makeDistributionManager()->Print("decay_models")

into the ROOT shell:

```
(X)   rho_hardpicutoff_e-_e+          Dilepton direct decay with pion cutoff (step function)
( )  rho_picutoff_e-_e+               Dilepton direct decay with pion cutoff
( )  rho0_ee_e-_e+                    Dilepton direct decay
```

So how many rho's we have? In total 3! This I did because over the past year nobody could answer the question about the correct implementation (and I think nobody will be able to do so in the next years - beside sticking to philosophy or religion ). Due to the fact, that the lower edge of the rho will always overtopped by the Delta Dalitz decay (and even mix with that?) maybe it is only a question of definition and therefore not really important.

Back to the models itself:

rho0_ee_e-_e+ is the pure added dGamma/dsigma, including the ee decay width, which has a pole at zero and therefore diverges. Not recommended!

rho_picutoff_e-_e+ is my own implementation with a 2pi phase space factor (this bounds the ee decay to the 2pi shape).

rho_hardpicutoff_e-_e+ (this is now the default due to many requests) is basically rho0_ee_e-_e+ but with a simple "hard cut" (a Theta function) at the 2pi threshold.

Please feel free to use whatever version you want, e.g.:

makeDistributionManager()->Enable("rho_picutoff_e-_e+")

brings back the old version from Pluto 5.37