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Subject: [SOLVED]generate rho0->pi+pi- but found the rho0 has no width  
Posted by [Xinying Song](#) on Thu, 02 Jun 2016 13:15:20 GMT

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when I simulate the process  $g + P \rightarrow P + \eta'$ ,  $\eta' \rightarrow \rho^0 + \gamma$ ,  $\rho^0 \rightarrow \pi^+ \pi^-$ , but found that the width of rho0 particle is 0. the eta' does not have width either.

I don't know why.

The rho0 mass pic mpipi.eps and the generating script are in the attachment.

### File Attachments

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- 1) [sim\\_etap\\_grho.C](#), downloaded 454 times
  - 2) [mpipi.eps](#), downloaded 422 times
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Subject: Re: generate rho0->pi+pi- but found the rho0 has no width

Posted by [Ingo Froehlich](#) on Fri, 03 Jun 2016 13:04:50 GMT

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This is because the decay  $\eta' \rightarrow \rho^0 + \gamma$  has no model included, one can see this in the printout:

```
2. eta' --> rho0 + photon
  Interaction model(s):
  [eta'_fixed_g_rho0] Fixed product masses {}
  [eta'_genbod_g_rho0] Pluto build-in genbod {/genbod}
```

I don't know if this is the correct physics model, but a decay with a simple Breit-Wigner can be done by adding these lines:

```
PHadronDecayM1N *newmodel =
  new PHadronDecayM1N("rho_model@eta'_to_rho0_g", "Patched rho model", -1);
makeDistributionManager()->Add(newmodel);
```

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Subject: Re: generate rho0->pi+pi- but found the rho0 has no width

Posted by [Xinying Song](#) on Fri, 03 Jun 2016 13:51:11 GMT

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Thanks very much! it's solved.

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