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Subject: [SOLVED] Beam Smearing

Posted by [Michael Kunkel](#) on Thu, 12 Apr 2012 17:43:32 GMT

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I simulated 1 giga eta dalitz events using a smeared photon beam.

The smearing was a brem 1/E function.

The commands look as

```
double ebeam_min = 1.1725;
double ebeam_max = 5.44575;
PBeamSmearing *beam_smear = new PBeamSmearing("beam_smear", "Beam smearing");
```

```
TF1* beam_smear_fn = new TF1("beam_smear_fn", "-3.82136e-03 + 7.24636e-02/x",
ebeam_min, ebeam_max);
```

```
beam_smear->SetReaction("g + p");
beam_smear->SetMomentumFunction(beam_smear_fn);
makeDistributionManager()->Add(beam_smear);
```

```
PReaction my_reaction("_P1 = 2.2", "g", "p", "p eta [dilepton [e+ e-] g]", "eta_dalitz", 1, 0, 0, 0);
```

The code compiles and runs correctly, however I see the following message "Warning in <PBeamSmearing::Init>: No smearing model found". Is this normal?

The reason I inquire about this is that after I create the PLUTO generated events, I run them through the JLab Monte-Carlo package, which is a GEANT based physics package. Afterward The reconstructed beam profile appears nothing like the actual data, nor does the leptons momenta spectrum. This is my first step in solving this.

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Subject: Re: Beam Smearing

Posted by [Ingo Froehlich](#) on Thu, 12 Apr 2012 19:14:20 GMT

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Hmm, I did a quick test with the recent version (v5.40.1) using the following macro:

```
{
double ebeam_min = 1.1725;
double ebeam_max = 5.44575;
PBeamSmearing *beam_smear = new PBeamSmearing("beam_smear", "Beam smearing");
```

```
TF1* beam_smear_fn = new TF1("beam_smear_fn", "-3.82136e-03 + 7.24636e-02/x",
ebeam_min, ebeam_max);
```

```
beam_smear->SetReaction("g + p");
beam_smear->SetMomentumFunction(beam_smear_fn);
makeDistributionManager()->Add(beam_smear);
```

```
TH1F * histo1 = new TH1F ("histo1", "c.m.", 100, 1., 4.);
```

```
PReaction my_reaction("_P1 = 2.2", "g", "p", "p eta [dilepton [e+ e-] g]", "eta_dalitz", 1, 0, 0, 0);
```

```

my_reaction.Do(histo1,"_x = [g+p]->M()");

my_reaction.Print();
my_reaction.Loop(10000);

}

```

The output is as follows:

### Reaction of 7 Particles interacting via 3 Channels

#### Reaction Particles:

0. quasi-particle (g beam and p target)
1. p
2. eta
3. dilepton
4. g
5. e+
6. e-

#### Reaction Channels:

1. g + p --> p + eta  
Interaction model(s):  
[beam\_smear] Beam smearing  
[g + p\_fix\_p\_eta] 2-body fixed mass, partial width {}  
[g + p\_genbod\_p\_eta] Pluto build-in genbod {/genbod}
2. eta --> dilepton + photon (Dalitz)  
Interaction model(s):  
[eta\_dalitz] Dalitz decay {}  
[eta\_genbod\_g\_dilepton] Pluto build-in genbod {/genbod}
3. dilepton --> e+ + e-  
Interaction model(s):  
[dilepton\_fixed\_e-\_e+] Fixed product masses {}  
[dilepton\_genbod\_e-\_e+] Pluto build-in genbod {/genbod}  
[eta\_dilepton\_helicity] Helicity angle of the dilepton decay of eta

#### Bulk Classes:

Epilogue: <PProjector>

#### Output Files:

Root : eta\_dalitz.root, all particles on file.

PReaction: calculating widths in PData...

Info in <PUtilsREngine::PUtilsREngine>: Random seed set to 60606

20% done in 1.261318 sec

40% done in 1.520687 sec

60% done in 1.780155 sec

80% done in 2.042362 sec

100% done in 1.300976 sec

CPU time 1.300000 sec

Are you using maybe an older version?

## File Attachments

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1) [c1.png](#), downloaded 412 times

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Subject: Re: Beam Smearing

Posted by [Michael Kunkel](#) on Thu, 12 Apr 2012 19:58:37 GMT

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That was it. I seem to have forgotten to change my path of my libPluto.so in the script.

I hope this yields better results.

Thanks

Edit: Now that I am using the latest version, I see this warning with any PLUTO script I write

```
/PLUTO/pluto_v5.40/src/PBatch.h: In member function 'void PBatch::SetVarList(char*)':  
/PLUTO/pluto_v5.40/src/PBatch.h:220: warning: declaration of 'x' shadows a member of 'this'
```

Everything works, just thought you should know.

EDIT:: This error is only seen when compiling ACLiC in ROOT

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