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Subject: Geantino?

Posted by [Tobias Stockmanns](#) on Fri, 08 Feb 2008 08:14:09 GMT

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Hi developers,

does anybody know how to create (standard / charged) geantinos with our box generator?

Thank's

Tobias

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Subject: Re: Geantino?

Posted by [Stefano Spataro](#) on Fri, 08 Feb 2008 08:22:58 GMT

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Ahem,

what is exactly a "geantino"?

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Subject: Re: Geantino?

Posted by [Tobias Stockmanns](#) on Fri, 08 Feb 2008 08:44:56 GMT

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Hi Stefano,

a Geantino is an artifical particle from Geant which is used as a geometrical probe. It is only transported through your detector and does not interact with it.

Ciao,

Tobias

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Subject: Re: Geantino?

Posted by [Tobias Stockmanns](#) on Mon, 11 Feb 2008 10:09:34 GMT

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Hi developers,

I have solved part of the geantino problem. The geantino has (in VirtualMC) the pdg code 0. I still do not know how to handle charge geantinos.

Ciao,

Tobias

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Subject: Re: Geantino?

Posted by [Ralf Kliemt](#) on Mon, 11 Feb 2008 10:11:43 GMT

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Hi Tobias,

The geantino (actually we use the rootino) can be accessed via the PDG number 0. in the simulation.

```
//ROOTino
```

```
CbmBoxGenerator *fBox1 = new CbmBoxGenerator(0, 1);
```

To give you the right feeling try to check inside root:

```
root [0] TDatabasePDG* pdgBase = TDatabasePDG::Instance()
root [1] TParticlePDG *particle = pdgBase->GetParticle(0)
root [2] particle->GetName()
(const char* 0x8466b18)"Rootino"
root [3] particle->Charm()
(const Int_t)(0)
root [4] particle->Charge()
(const Double_t)0.0000000000000000e+00
root [5] particle->Lifetime()
(const Double_t)0.0000000000000000e+00
root [6] particle->Mass()
(const Double_t)0.0000000000000000e+00
root [7] particle->Width()
(const Double_t)0.0000000000000000e+00
root [8] particle->Stable()
(const Int_t)(1)
root [9] particle->ParticleClass()
(const char* 0x84652c8)"Unknown"
root [10] particle->Spin()
(const Double_t)0.0000000000000000e+00
root [11] particle->Parity()
(const Int_t)(0)
```

...

Greetings from Dresden,  
Ralf.

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Subject: Re: Geantino?

Posted by [asanchez](#) on Mon, 11 Feb 2008 10:19:08 GMT

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hallo Tobias,  
you can add your charge geantino doing as follows  
best regards  
ALicia

```
CbmParticle *chargedGeant = new CbmParticle("He5", Z,A,1, mass,Z,kFALSE,lifetime);
```

```
fRun->AddNewParticle(cgargedGeant );
```

```
Int_t pdg;
```

```
TDatabasePDG *db= TDatabasePDG::Instance();
```

```
TParticlePDG *p=0;
```

```
p=db->GetParticle("chargedGeant");
```

```
if(p) pdg = p->PdgCode();
```

```
CbmParticleGenerator* partGen = new CbmParticleGenerator(pdg, 1, -0.3,0.3,0.3, 0., 0., 0);
```

```
primGen->AddGenerator(partGen);
```

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Subject: Re: Geantino?

Posted by [asanchez](#) on Mon, 11 Feb 2008 10:31:44 GMT

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Sorry,

```
CbmParticle *chargedGeant = new CbmParticle("chargedGeant", Z,A,1, mass,Z,kFALSE,lifetime);
```

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Subject: Re: Geantino?

Posted by [Tobias Stockmanns](#) on Mon, 11 Feb 2008 10:39:51 GMT

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Hi Alicia,

thank you for your reply.

I have tested your suggestion. Unfortunately it fails with the following error message:

```
TG4PrimaryGeneratorAction::TransformPrimaries:
```

```
G4ParticleTable::FindParticle() failed for crootino pdgEncoding=10000000.
```

```
*** TG4Exception: Aborting execution ***
```

Do you have any idea how to solve this problem?

Tanks,

Tobias

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Subject: Re: Geantino?

Posted by [Tobias Stockmanns](#) on Mon, 11 Feb 2008 10:41:27 GMT

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Hi Ralf,

is there a charged rootino, too?

Thanks,

Tobias

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Subject: Re: Geantino?

Posted by [asanchez](#) on Mon, 11 Feb 2008 10:46:26 GMT

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Hi Tobias, try to do that

```
CbmParticle *chargedGeant = new CbmParticle("chargedGeant",  
Z,A, mass,Z,kFALSE,lifetime);
```

sorry there was one additional field inside, remove the one  
in the constructor.

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Subject: Re: Geantino?

Posted by [asanchez](#) on Mon, 11 Feb 2008 11:07:42 GMT

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i have found the following information in geant4  
for the charged geantino

Arguments for constructor are as follows

```
00062 //      name      mass      width      charge  
00063 //      2*spin      parity C-conjugation  
00064 //      2*Isospin  2*Isospin3  G-parity  
00065 //      type  lepton number  baryon number  PDG encoding  
00066 //      stable      lifetime  decay table  
00067 //      shortlived  subType  anti_encoding  
00068 anInstance = new G4ParticleDefinition(  
00069     name,      0.0*MeV,      0.0*MeV,  +1.*eplus,  
00070     0,         0,         0,  
00071     0,         0,         0,  
00072     "geantino", 0,         0,         0,  
00073     true,      0.0,      NULL,  
00074     false,    "geantino", 0  
00075 );
```

maybe it works for the following options

```
CbmParticle *chargedGeant = new CbmParticle("chargedGeant",
```

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1,0, 0,1,kTRUE,0);

---

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Subject: Re: Geantino?

Posted by [Ralf Kliemt](#) on Mon, 11 Feb 2008 12:03:50 GMT

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Hi again,

I found this description in the root classes:

Quote: TDatabasePDG

Particle database manager class

This manager creates a list of particles which by default is initialised from with the constants used by PYTHIA6 (plus some other particles added). See definition and the format of the default particle list in \$ROOTSYS/etc/pdg\_table.txt

there are 2 ways of redefining the name of the file containing the particle properties

1. one can define the name in .rootrc file:

Root.DatabasePDG: \$(HOME)/my\_pdg\_table.txt

2. one can use TDatabasePDG::ReadPDGTable method explicitly:

- TDatabasePDG \*pdg = new TDatabasePDG();
- pdg->ReadPDGtable(filename)

See TParticlePDG for the description of a static particle properties.

See TParticle for the description of a dynamic particle particle.

This means you could just create your own charged rootino. Additionally I found the rootino at the pdg ID 521 in root/etc/pdg\_table.txt.

Ralf.

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Subject: Re: Geantino?

Posted by [Tobias Stockmanns](#) on Mon, 11 Feb 2008 12:47:25 GMT

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Dear Ralf and Alicia,

with both of you ways (my\_pdg\_table.txt / fRun->AddNewParticle) I am able to create a charged rootino in root. But it seems that this particle is not correctly transformed into Geant because I always get the following error message:

TG4PrimaryGeneratorAction::TransformPrimaries:

G4ParticleTable::FindParticle() failed for ChargedGeantino pdgEncoding=1001000.

\*\*\* TG4Exception: Aborting execution \*\*\*

Tobias

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