
Subject: Geant4 and Hadron lists

Posted by [Stefano Spataro](#) on Wed, 08 Aug 2007 18:14:44 GMT

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If I read the file gconfig/g4Config.C I find the lines:

```
// RunConfiguration for Geant4
  TG4RunConfiguration* runConfiguration = new TG4RunConfiguration("geomRoot");

//Switch on optical physics (not activated by default)
TG4PhysicsListOptions options;
options.SetOpticalPhysics(true);
options.SetSpecialControlsPhysics(true);
options.SetSpecialCutsPhysics(true);

runConfiguration->SetPhysicsListOptions(options);
```

But if I check the standard constructor of TG4PhysicsListOptions
(transport/geant4_vmc/source/physics/src/TG4PhysicsListOptions.cxx) I can see that:

```
TG4PhysicsListOptions::TG4PhysicsListOptions()
: fSetEMPhysics(true),
  fSetMuonPhysics(true),
  fSetHadronPhysics(false),
  fSetOpticalPhysics(false),
  fSetSpecialCutsPhysics(false),
  fSetSpecialControlsPhysics(false),
  fSetStepLimiterPhysics(true)
{
//
}
```

While OpticalPhysics SpecialControlsPhysics and SpecialCutsPhysics are set on by the user in G4Config.C, the HadronPhysics remains set to false. Indeed if I set it on in the g4Config I get these new lines in the output of mky simulation:

```
#### Hadron physics for ions constructed.
#### Hadron physics for hadrons constructed.
```

What does it mean? Does it mean that the hadronic lists are off? I do not think so, even considering the log messages, I suppose the TGeant4::SetProcess will set something on. But I have small differences in the results adding or not the HadronPhysics line in the g4Config.

So, what is the difference between the two ways of setting processes? Or better... what are we using?