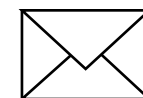

Scintillation Process issue in GATEv9.0 (Solution: GATEv9.0 + Geant4.9.05.p01)

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Scintillation Process in GATEv9.0

Issue #346 (by Han Gyu Kang)

Scintillation Process does NOT work in GATEv9.0 #346

 Open hangyookang opened this issue on Jun 9 · 3 comments



hangyookang commented on Jun 9



Scintillation Process does NOT work in GATEv9.0


Recently, I installed GATEv9.0 on my Ubuntu Linux PC with Geant4 10.06.p02.
The "GATE_USE_OPTICAL" option was turned ON during the installation.

After GATE installation, I checked that everything works fine except the scintillation process.
The optical.mac in the benchImaging folder is working well as it uses "opticalphoton" as a source.
I checked that Cerenkov process is also working.
However, "Scintillation Process" is NOT working in GATEv9.0 optical simulation.

Is there any one who validated in "scintillation process" in GATEv9.0?



wrzof commented 6 hours ago

Contributor 

Hi,

For me either, the combination gatev9 + geant4 10.06 doesn't produce scintillation. I advice you to use geant4 10.05 for the moment. We will try to figure out what it is happening.

In release note of geant4 10.06 (<http://geant4-data.web.cern.ch/geant4-data/ReleaseNotes/ReleaseNotes4.10.6.html>), I only found a mention to scintillation :

| G4Cerenkov, G4Scintillation, G4SynchrotronRadiation, G4VTransitionRadiation: added registration/de-registration mechanism.



For now, I do not know if it is related to our problem.

Issue (Jun 9, 2020)

Fix (Oct 21, 2020)

Fix issue

Fix issue #346 #368

 Open wrzof wants to merge 1 commit into `OpenGATE:develop` from `wrzof:fix_scintillation_with_geant4_10.06` 

 Conversation **0**  Commits **1**  Checks **9**  Files changed **3**



wrzof commented 2 hours ago

Contributor  

This pull request aims to fix issue [#346](#).

Implementation of `IsApplicable` in `GateScintillation` to get back behaviour of geant4 10.05.

`IsApplicable` has been changed between geant4 10.05 and geant4 10.06 which made `Scintillation` not applicable for gamma. Because gamma has a `PDGCharge` of 0.0. Here we go back to previous implementation until we find another solution (ie without bypassing geant4).

Code in geant4 10.05:

```
G4bool G4Scintillation::IsApplicable(const G4ParticleDefinition& aParticleType)
{
    if (aParticleType.GetParticleName() == "opticalphoton") return false;
    if (aParticleType.IsShortLived()) return false;

    return true;
}
```

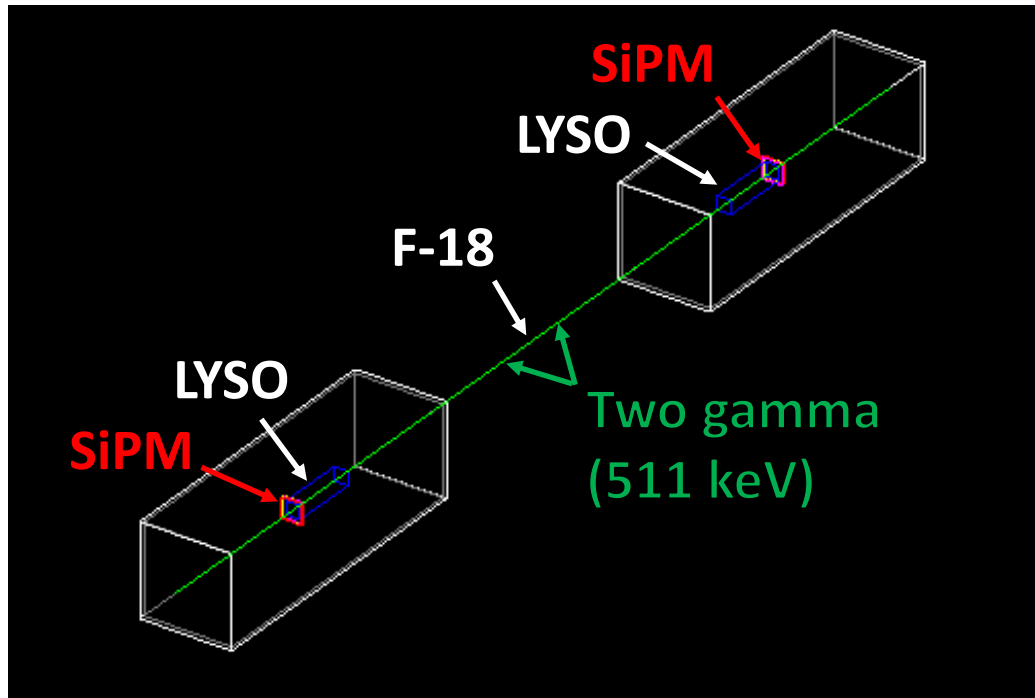
Code in geant4 10.06:

```
G4bool G4Scintillation::IsApplicable(const G4ParticleDefinition& aParticleType)
{
    return (aParticleType.GetPDGCharge() == 0.0 ||
            aParticleType.IsShortLived()) ? false : true;
}
```

Scintillation Process in GATEv9.0

GATEv9.0 + Geant4.10.06.p02

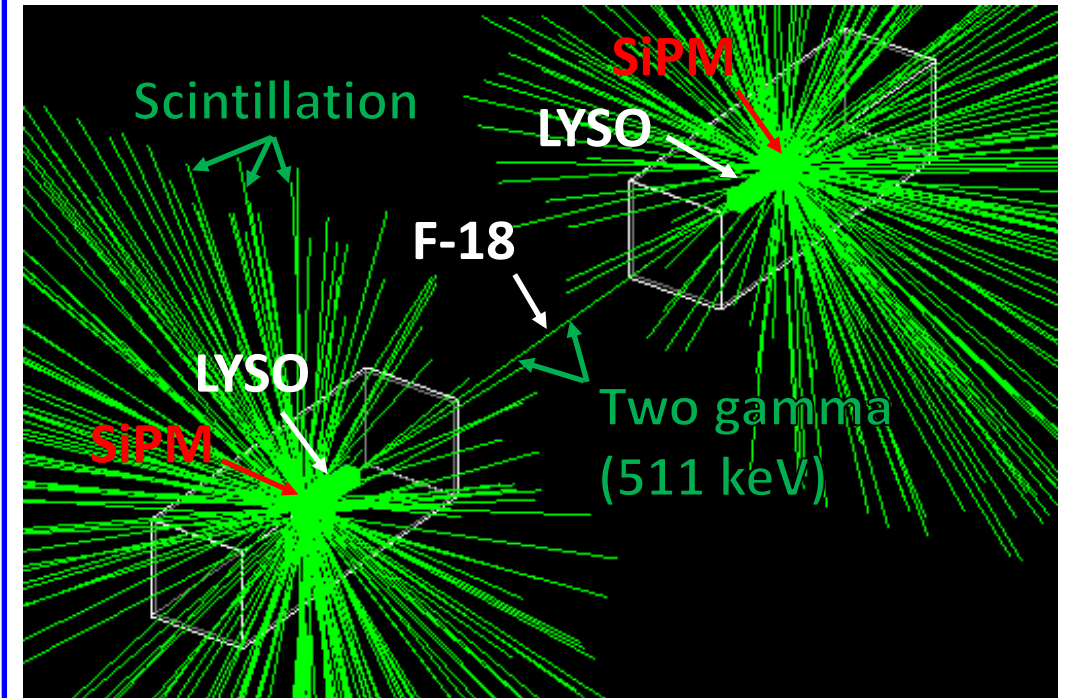
Scintillation Process does **NOT** work



```
G4bool G4Scintillation::IsApplicable(const G4ParticleDefinition&
aParticleType)
{
{ return (aParticleType.GetPDGCharge() == 0.0 ||
aParticleType.IsShortLived()) ? false : true; }
}
```

GATEv9.0 + Geant4.9.05.p01

Scintillation Process **does** work!



```
G4bool G4Scintillation::IsApplicable(const G4ParticleDefinition&
aParticleType)
{
if (aParticleType.GetParticleName() == "opticalphoton") return false;
if (aParticleType.IsShortLived())
return false; return true;
}
```