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GATEv8.2
PETscanner
▶ genericRepeater
Coincidence sorter
problem and solution

GATEv8.2 PETscanner genericRepeater

Problem: No coincidence in the "PETscanner" when **genericRepeater** was used.

Solution: Modify the GATEv8.2 source code using a **git patch file** and **re-compile**.

GATE mailing list (Christian Pommranz <pommranz@astro.uni-tuebingen.de>)
<http://lists.opengatecollaboration.org/pipermail/gate-users/2019-February/010729.html>

STEP1> Download the git patch file in the mailing list.
Filename: **coincidences_for_generic_repeater.patch**

STEP2> Apply the git patch file.
>cd /home/kanghg2/program/Gate-8.2
>git apply --ignore-space-change --ignore-whitespace coincidences_for_generic_repeater.patch

STEP3> Re-compile GATEv8.2
>cd /home/kanghg2/program/Gate-8.2-build
>ccmake ../Gate-8.2
[c] configure
[g] generate

>make

STEP4> Run the GATE PETscanner with genericRepeater.
Now coincidence output will be generated!

>vi coincidences_for_generic_repeater.patch

```
kanghg2@kanghg2: ~/Downloads
File Edit View Search Terminal Help
1 diff --git a/source/digits_hits/src/GateCoincidenceSorter.cc b/source/digits_hits/src/GateCoincidenceSorter.cc
2 index 91529259..0951c2c6 100644
3 --- a/source/digits_hits/src/GateCoincidenceSorter.cc
4 +++ b/source/digits_hits/src/GateCoincidenceSorter.cc
5 @@ -422,7 +422,12 @@ G4int GateCoincidenceSorter::ComputeSectorID(const GatePulse& pulse)
6     GateSystemComponent* comp = m_system->GetBaseComponent();
7     G4int depth=0;
8     while (comp){
9         gkSectorNumber.push_back(comp->GetAngularRepeatNumber());
10 +     G4int rep_num = comp->GetAngularRepeatNumber();
11 +     if (rep_num == 1)
12 +         // Check for generic repeater
13 +         rep_num = comp->GetGenericRepeatNumber();
14 +     gkSectorNumber.push_back(rep_num);
15 +
16 +     if ( (depth<m_depth) && ( comp->GetChildNumber() == 1) ){
17 +         comp = comp->GetChildComponent(0);
18 +         depth++;
19 @@ -438,6 +443,7 @@ G4int GateCoincidenceSorter::ComputeSectorID(const GatePulse& pulse)
20     gm_coIncSectNum = gkSectorMultiplier[0];
21 }
22 G4int ans=0;
23 +
24 + for (G4int l=0;l<=m_depth;l++){
25     G4int x = pulse.GetComponentID(l)%gkSectorNumber[l];
26     ans += x*gkSectorMultiplier[l];
27 diff --git a/source/geometry/include/GateGenericRepeater.hh b/source/geometry/include/GateGenericRepeater.hh
28 index 073d7e27..587b9035 100644
29 --- a/source/geometry/include/GateGenericRepeater.hh
30 +++ b/source/geometry/include/GateGenericRepeater.hh
31 @@ -35,6 +35,7 @@ public:
32     void SetPlacementsFilename(std::string filename);
33     void EnableRelativeTranslation(bool b) { mUseRelativeTranslation = b; }
34     void SetPlacementList(std::vector<GatePlacement> l);
35 + G4int GetRepeatNumber() { return (G4int)mPlacementsList.size(); };
36
37 protected:
38     GateGenericRepeaterMessenger* mMessenger;
39 diff --git a/source/geometry/include/GateSystemComponent.hh b/source/geometry/include/GateSystemComponent.hh
40 index 41369553..81de4d1c 100644
41 --- a/source/geometry/include/GateSystemComponent.hh
42 +++ b/source/geometry/include/GateSystemComponent.hh
43 @@ -27,6 +27,7 @@ class G4VPhysicalVolume;
44 class GateVolumePlacement;
45 class GateLinearRepeater;
46 class GateAngularRepeater;
47 +class GateGenericRepeater;
48 class GateSphereRepeater;
49 class GateOrbitingMove;
50 class GateEccentRotMove;
```

2,31

Top

```
51 @@ -293,6 +294,16 @@ class GateSystemComponent : public GateClockDependent
52     //()
53
54
55 + //()
56 +
57 + //! \name Access to the generic repeater properties (if any)
58 + //()
59 +
60 + //! Finds the first generic repeater in the creator's repeater list
61 + GateGenericRepeater* FindGenericRepeater();
62 + //! Finds the first generic repeater's repeat number
63 + G4int GetGenericRepeatNumber();
64 +
65 + //()
66
67
68 diff --git a/source/geometry/src/GateSystemComponent.cc b/source/geometry/src/GateSystemComponent.cc
69 index 117c482d..6b4acbb4 100644
70 --- a/source/geometry/src/GateSystemComponent.cc
71 +++ b/source/geometry/src/GateSystemComponent.cc
72 @@ -22,6 +22,7 @@
73 #include "GateObjectChildList.hh"
74 #include "GateLinearRepeater.hh"
75 #include "GateAngularRepeater.hh"
76 +#include "GateGenericRepeater.hh"
77 #include "GateSphereRepeater.hh"
78 #include "GateSystemComponentList.hh"
79 #include "GateObjectRepeaterList.hh"
80 @@ -660,6 +661,29 @@ G4double GateSystemComponent::GetSphereRadius()
81 }
82 //-----
83
84 +
85 +
86 +//-----
87 +// Finds the first generic repeater in the creator's repeater list
88 +GateGenericRepeater* GateSystemComponent::FindGenericRepeater()
89 +{
90 + return FindRepeater<GateGenericRepeater>();
91 +}
92 +//-----
93 +
94 +
95 +//-----
96 +// Finds the first linear-repeater's repeat number
97 +G4int GateSystemComponent::GetGenericRepeatNumber()
98 +{
99 + GateGenericRepeater* repeater = FindGenericRepeater();
100 + return repeater ? repeater->GetRepeatNumber() : 1;
101 +}
102 +
103 +//-----
104 +
105 +
106 +
107 void GateSystemComponent::setInCoincidenceWith(G4String aRsectorName )
108 {
109     size_t pos = GetObjectName().rfind( "/" );
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