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Subject: Re: still trouble with Geane  
Posted by [Lia Lavezzi](#) on Fri, 24 Apr 2009 12:22:37 GMT  
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Hi Christian,  
we made some changes in geane (listed below). Can you please run your tests with these changes and tell us if they are successful?

Here is the list of the changes you should do in geant3.  
For erpremc/trscsd.F and trsdsc.F we just made your ones; in addition to these we also made modifications in: TGeant3/TGeant3.cxx and .h, erdecks/ertrak.F, comad/gcomad.F and geant321/ertrio.F.

The rationale is the following:

to assure a minimal impact and to not perturb the non PANDA current users of GEANE, we added to the GEANE common ERTRIO a labelled common ERTRIO1 containing three error flags. We use only IERTR for the moment.

Therefore, the unaware user will not detect the change, apart from a standard error message from ERTRAK when the FP exception happens.

The common modification required some interventions on the TGeant3 package.

In our interface we manage the ertrio1 common and skip the hit when IERTR=1, as you suggested.

For trscsd.F:

```
--- erpremc.orig/trscsd.F    2009-04-23 16:55:02.000000000 +0200
+++ erpremc/trscsd.F    2009-04-23 17:07:29.000000000 +0200
@@ -145,6 +145,7 @@ C
     DO 25 I=1,5
       DO 20 K=I,5
         J=J+1
+      IF(ABS(S(J)).GT.1E30) GOTO 901
       RD(J)=S(J)
     20 CONTINUE
     25 CONTINUE
```

and for trsdsc.F:

```
--- erpremc.orig/trsdsc.F    2009-04-23 16:55:02.000000000 +0200
+++ erpremc/trsdsc.F    2009-04-23 17:10:06.000000000 +0200
@@ -73,6 +73,7 @@ C
     5 CONTINUE
C
  PC(1)=PD(1)
+  IF(ABS(TN(3)).GT.1) GOTO 99
  PC(2)=ASIN(TN(3))
  IF (ABS (TN(1)) .LT. 1.E-30) TN(1) = 1.E-30
  PC(3) = ATAN2 (TN(2),TN(1))
@@ -135,6 +136,7 @@ C
     DO 25 I=1,5
       DO 20 K=I,5
         J=J+1
+      IF(ABS(S(J)).GT.1E30) GOTO 99
       RC(J)=S(J)
```

```

20 CONTINUE
25 CONTINUE
@@ -142,6 +144,9 @@ C
RETURN
C
C *** ERROR EXITS
-C
+C
+ 99 IERR=1
+ RETURN
+*
END
*
```

For erdecks/ertrak.F:

```

--- erdecks.orig/ertrak.F 2009-04-23 16:55:31.000000000 +0200
```

```

+++ erdecks/ertrak.F 2009-04-23 17:05:04.000000000 +0200
```

```

@@ -73,6 +73,8 @@
```

```

*
```

```

* *** Decode character option
```

```

*
```

```

+ IERTR=0
```

```

+*
```

```

CHOPTI = CHOPT
```

```

CALL UOPTC (CHOPT, 'BELMOPVX', IOPT)
```

```

*
```

```

@@ -162,9 +164,25 @@
```

```

CALL VZERO (DUM,15)
```

```

CALL TRSCSD (ERPIN(1), DUM(1), ERPIN(1), DUM(1), HI(1),
```

```

+ CHARGE, IERR, SPU, ERPLI(1,1), ERPLI(1,2))
```

```

+ IF(IERR.NE.0) THEN
```

```

+*
```

```

+* *** Tracking error - floating point exception
```

```

+*
```

```

+ IERTR=1
```

```

+ WRITE (LOUT, 780)
```

```

+ GOTO 99
```

```

+ ENDIF
```

```

IF (LEONLY) GOTO 35
```

```

CALL TRSDSC (ERPIN(1), ERRIN(1), DUM(1), ERRIN(1), HI(1),
```

```

+ CHARGE, IERR, SPU, ERPLI(1,1), ERPLI(1,2))
```

```

+ IF(IERR.NE.0) THEN
```

```

+*
```

```

+* *** Tracking error - floating point exception
```

```

+*
```

```

+ IERTR=1
```

```

+ WRITE (LOUT, 780)
```

```

+ GOTO 99
```

```

+ ENDIF
```

```

DO 29 I = 1, 5
```

```

DO 28 J = 1, 5
```

```

ASDSC(I,J) = A(I,J)
```

For comad/gcomad.F:

```
--- comad.orig/gcomad.F 2009-04-23 17:10:55.000000000 +0200
+++ comad/gcomad.F 2009-04-23 17:12:16.000000000 +0200
@@ -253,6 +253,8 @@ C
    IADD=GCADDI(IQUEST)
    ELSE IF(CHCOMM.EQ.'ERTRIO') THEN
    IADD=GCADDD(ERDTRP)
+   ELSE IF(CHCOMM.EQ.'ERTRIO1') THEN
+   IADD=GCADDD(IERTR)
    ELSE IF(CHCOMM.EQ.'EROPTS') THEN
    IADD=GCADDF(ERPLI)
    ELSE IF(CHCOMM.EQ.'EROPTC') THEN
```

For TGeant3/TGeant3.cxx:

```
--- TGeant3.orig/TGeant3.cxx 2009-04-23 16:55:13.000000000 +0200
+++ TGeant3/TGeant3.cxx 2009-04-23 17:03:45.000000000 +0200
@@ -1262,6 +1262,7 @@ void TGeant3::LoadAddress()
```

```
    // Commons for GEANE
    gcomad(PASSCHARD("ERTRIO"),(int*)& fErtrio PASSCHARL("ERTRIO"));
+   gcomad(PASSCHARD("ERTRIO1"),(int*)& fErtrio1 PASSCHARL("ERTRIO1"));
    gcomad(PASSCHARD("EROPTS"),(int*)& fEropts PASSCHARL("EROPTS"));
    gcomad(PASSCHARD("EROPTC"),(int*)& fEroptc PASSCHARL("EROPTC"));
    gcomad(PASSCHARD("ERWORK"),(int*)& fErwork PASSCHARL("ERWORK"));
```

For TGeant3/TGeant3.h:

```
--- TGeant3.orig/TGeant3.h 2009-04-23 16:55:13.000000000 +0200
+++ TGeant3/TGeant3.h 2009-04-23 17:24:25.000000000 +0200
@@ -494,7 +494,11 @@ typedef struct {
    Int_t ilpred;
    Int_t iepred;
} Ertrio_t;
-
+typedef struct {
+ Int_t iertr;
+ Int_t iertr1;
+ Int_t iertr2;
+} Ertrio1_t;
//-----EROTPS
// CHARACTER*8 CHOPTI
// LOGICAL LEEXAC, LELENG, LEONLY, LEPLAN, LEPOIN, LEVOLU
@@ -774,6 +778,7 @@ public:
    // Access to GEANE commons

    virtual Ertrio_t* Ertrio() const {return fErtrio;}
+   virtual Ertrio1_t* Ertrio1() const {return fErtrio1;}
    virtual Eropts_t* Eropts() const {return fEropts;}
    virtual Eroptc_t* Eroptc() const {return fEroptc;}
    virtual Erwork_t* Erwork() const {return fErwork;}
@@ -1054,6 +1059,7 @@ public:
    Float_t weight, Int_t is);
```

```

Ertrio_t *fErtrio;      //!< ERTRIO common structure
+ Ertrio1_t *fErtrio1;  //!< ERTRIO1 common structure
  Eropts_t *fEropts;    //!< EROPTS common structure
  Eroptc_t *fEroptc;    //!< EROPTC common structure
  Erwork_t *fErwork;    //!< ERWORK common structure

```

For geant321/ertrio.F:

```

--- geant321.orig/ertrio.inc  2009-04-23 17:15:52.000000000 +0200
+++ geant321/ertrio.inc 2009-04-23 17:22:41.000000000 +0200
@@ -32,6 +32,8 @@
+      ETRRSP(5,5,MXPRED), ERXIN( 3), ERXOUT( 3,MXPRED),
+      ERPIN(3), ERPOUT(3,MXPRED), NEPRED,INLIST,ILPRED,
+      IEPRED(MXPRED)
+  COMMON /ERTRIO1/ IERTR, IERTR1, IERTR2
+  INTEGER      IERTR, IERTR1, IERTR2
#include "geant321/eropts.inc"

```

Then in the pandaroot/geane interface:

in FairGeanePro.cxx:

```

--- FairGeanePro.orig.cxx  2009-04-24 14:00:30.000000000 +0200
+++ FairGeanePro.cxx  2009-04-24 14:02:51.000000000 +0200
@@ -38,6 +38,7 @@ FairGeanePro::FairGeanePro() : TNamed("G
  fdbPDG= TDatabasePDG::Instance();
  fErrorMat= new TArrayD(15);
  afErtrio=gMC3->fErtrio;
+ afErtrio1=gMC3->fErtrio1;
  Pos=TVector3(0, 0 , 0);
  PosErr = TVector3(0,0,0);
  Mom=TVector3(0,0,0);
@@ -262,7 +263,9 @@ Bool_t FairGeanePro::Propagate(Float_t *
;
  gMC3->Eufill(1, ein,xf);
  gMC3->Ertrak(x1,p1,x2,p2,GeantCode, "L");
- if(x2[0]<-1.E29) return kFALSE;
+
+ if(afErtrio1->iertr != 0) return kFALSE;
+ // if(x2[0]<-1.E29) return kFALSE;
}

Bool_t FairGeanePro::Propagate(Int_t PDG) {
@@ -272,7 +275,8 @@ Bool_t FairGeanePro::Propagate(Int_t PDG
  cout << " FairGeanePro::Propagate -----" << " " << x1[0] << " " <<
x1[1] << " " << x1[2] << endl;
  fApp->GeanePreTrack(x1, p1, PDG);
  gMC3->Ertrak(x1,p1,x2,p2,GeantCode, fPropOption.Data());
- if(x2[0]<-1.E29) return kFALSE;
+ if(afErtrio1->iertr != 0) return kFALSE;
+ // if(x2[0]<-1.E29) return kFALSE;
  trklength=gMC3->TrackLength();

  Double_t trasp[25];

```

@@ -532,7 +536,8 @@ int FairGeanePro::FindPCA(Int\_t pca, Int

```
//check needed for low momentum tracks
gMC3->Ertrak(x1,p1,x2,p2,GeantCode, fPropOption.Data());
- if(x2[0]<-1.E29) return 1;
+ if(afErtrio1->iertr != 0) return 1;
+ // if(x2[0]<-1.E29) return 1;
gMC3->GetClose(po1,po2,po3,clen);
```

// check on cases when only two steps are performed!

For FairGeanePro.h:

```
--- FairGeanePro.orig.h 2009-04-24 14:00:30.000000000 +0200
+++ FairGeanePro.h      2009-04-23 17:15:46.000000000 +0200
@@ -84,6 +84,7 @@ public:
    TVector3 Mom;
    TArrayD *fErrorMat;
    Ertrio_t *afErtrio;
+   Ertrio1_t *afErtrio1;
    Float_t x1[3];
    Float_t p1[3];
    Int_t GeantCode;
```

If also your tests will be positive, we would ask Mohammad to send these changes to CERN (or, if Mohammad agrees we can do that). After the CERN release we will need the new external packages realease and when it will be ready I will put my changes concerning the geane directory in the svn repository.

Best Regards,  
Alberto and Lia.