

# Events

De Wiki

Aller à : [navigation](#), [rechercher](#)  
[Events](#)

Some widgets are corresponding to the most used orbital events as defined with [[PATRIUS](#)]. The following list is not exhaustive but will present the use of a part of them. Moreover such events are also internally used in attitude or maneuver sequences.

## Sommaire

- [1 How to call it](#)
- [2 Display](#)
- [3 How to use it](#)
- [4 How it is stored](#)

## How to call it

Some basic event widgets are:

- [GPAltitudeDetector](#),
- [GPDateDetector](#),
- [GPRecurrentDateDetector](#) (since V2.1),
- [GPRelativeDateDetector](#),
- [GPRelativeRecurrentDateDetector](#) (since V2.1),

And the following events are specific as they have the possibility to define an occurrence for triggering them.

- [GPAOLDetector](#),
- [GPApsideDetector](#),
- [GPEclipseDetector](#),
- [GPLocalTimeDetector](#),
- [GPNodeDetector](#),
- [GPVisibilityFromStationDetector](#),

It is very simple to call them:

- Using a constructor with a single label:

```
date = new GPDateDetector("Absolute date event");
```

- ... or with an initial event for initialization (and in that case, we have also specified the kind of actions raised by this event with RESET actions):

```
final AbsoluteDate date0 = new AbsoluteDate(2010, 1, 1,  
TimeScalesFactory.getUTC());
```

```
final CustomDateDetector dateDetector = new CustomDateDetector(date0);
date = new GPDateDetector("Absolute date eve nt", dateDetector,
Action.RESET_STATE, Action.RESET_DERIVATIVES);
```

Note: we do not use directly [\[PATRIUS\]](#) detectors but **GENOPUS** ones as some getter methods, necessary for the widgets, do not exist.

There is also the possibility to freeze the action associated for such events (for example, if the event is associated to a maneuver, it must be set to **STOP** and there must have no possibility to change the action. In that case, we have just to give a single action in the constructor then, this action will not be displayed. With the previous date event, it will be:

```
date = new GPDateDetector("Absolute date eve nt", dateDetector, Action.STOP);
```

At last, it exists a global [GPEventSelector](#) widget proposing a menu to select an event through a predefined list. In the example below, we will propose only an apside and a node event ...

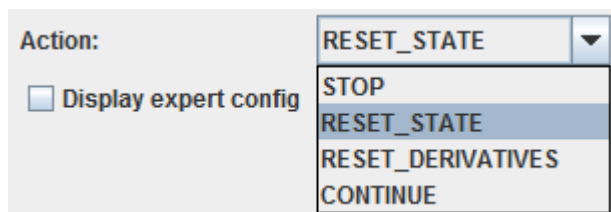
```
eventSelector =
    new GPEventSelector("Events:", GPEventsEnum.APSIDE, GPEventsEnum.NODE);
```

## Display


The display just below corresponds to [GPDateDetector](#):



We see that the display is composed of a [GPAbsoluteDate](#) widget followed by fields corresponding to the event definition with the type of action (see [\[PATRIUS\]](#) documentation for more information):

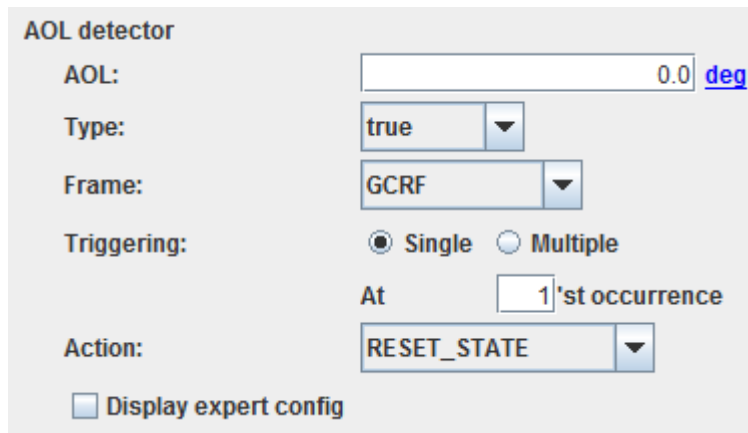


... and eventually expert settings including the checking interval and the convergence threshold (see [\[PATRIUS\]](#) documentation for more information):



On the following example ([GPAOLDetector](#)), we see another event detector but with a trigger

information (i.e. the occurrence of the event):



AOL detector

AOL:  [deg](#)

Type:  ▼

Frame:  ▼

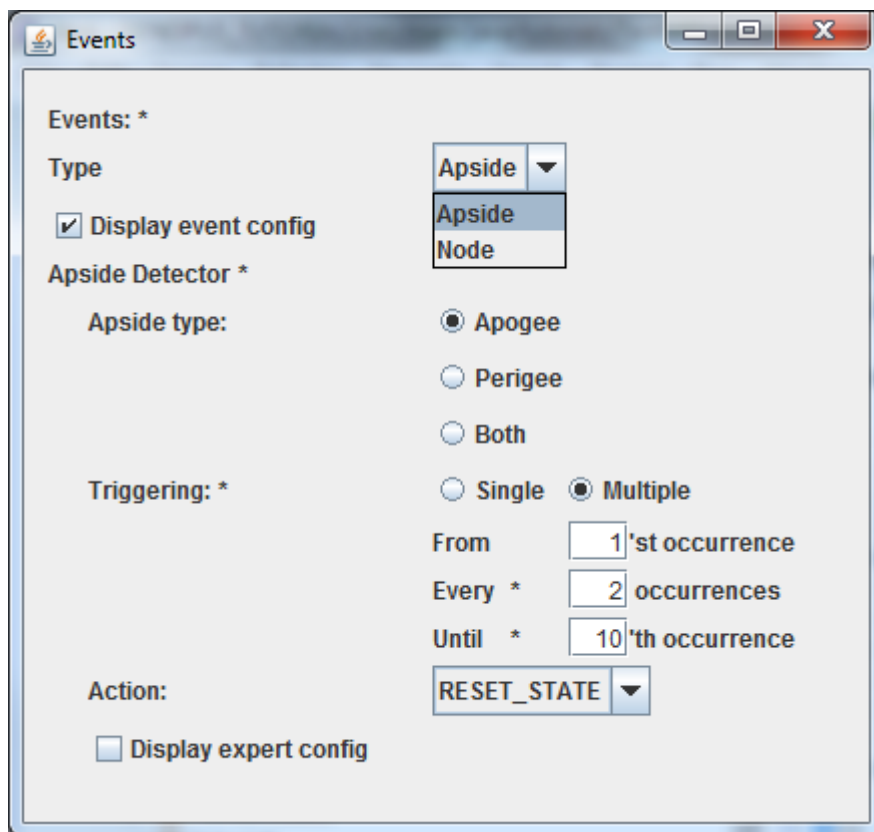
Triggering: ☒ Single ☐ Multiple

At st occurrence

Action:  ▼

☐ Display expert config

At last, here is the display when using [GPEventSelector](#) widget, customised with only **Apsides** and **Node** events and showing the trigger information in a different way as above:



Events \*

Type  ▼

☒ Display event config

Apside Detector \*

Apside type: ☒ Apogee ☐ Perigee ☐ Both

Triggering: \* ☐ Single ☒ Multiple

From st occurrence

Every \*  occurrences

Until \* th occurrence

Action:  ▼

☐ Display expert config

## How to use it

To get the corresponding **GENOPUS** objects, we will just have to call for the [getPatriusObject\(\)](#) method as below:

```
CustomDateDetector dateDetector = date.getPatriusObject();
```

... or, when using [GPEventSelector](#):

```
CustomDateDetector dateDetector = eventSelector.getPatriusObject()
```

## How it is stored

Here is an example of XML format for <font [GPDateDetector](#):

```
<DateDetector name="Absolute_date_event">
  <AbsoluteDate name="eventDate">
    <String name="date">01/01/2010 00h00m00s</String>
    <String name="scale">UTC</String>
  </AbsoluteDate>
  <String name="actionData">RESET_STATE</String>
  <Real name="maxCheck" unit="s">1.0E10</Real>
  <Real name="threshold" unit="s">1.0E-9</Real>
</DateDetector>
```

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## Menu de navigation

### Outils personnels

- [3.145.58.169](#)
- [Discussion avec cette adresse IP](#)
- [Créer un compte](#)
- [Se connecter](#)

### Espaces de noms

- [Page](#)
- [Discussion](#)

### Variantes

### Affichages

- [Lire](#)
- [Voir le texte source](#)
- [Historique](#)
- [Exporter en PDF](#)

### Plus

### Rechercher

<input type="text"/>	<input type="button" value="Rechercher"/>	<input type="button" value="Lire"/>
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# GENOPUS

- [Welcome](#)
- [Quick Start](#)
- [News](#)

## User Manual

- [BasicPrinciples](#)
- [GPAbsoluteDate](#)
- [GPOrbit](#)
- [GPFramesConfiguration](#)
- [GPVehicle](#)
- [GPForceModels](#)
- [GPManeuverSequence](#)
- [GPAttitudeSequence](#)
- [GPIntegrator](#)
- [GPAxisCoordinates](#)
- [GPGeodeticPoint](#)
- [GPOneAxisEllipsoid](#)
- [GPRotation](#)
- [GPConstants](#)
- [Events](#)
- [GPCorrelation](#)

## Evolutions

- [Main differences between V2.4.1 and V2.4.2](#)
- [Main differences between V2.3.3 and V2.4.1](#)
- [Main differences between V2.2.1 and V2.3.3](#)
- [Main differences between V2.2 and V2.2.1](#)
- [Main differences between V2.1.1 and V2.2](#)
- [Main differences between V2.1 and V2.1.1](#)
- [Main differences between V2.0.1 and V2.1](#)
- [Main differences between V2.0 and V2.0.1](#)
- [Main differences between V1.3.1 and V2.0](#)
- [Main differences between V1.3 and V1.3.1](#)
- [Main differences between V1.2.1 and V1.3](#)

## Training

- [Make your own propagator tool!](#)
- [Tutorials package for V2.4.1](#)
- [Tutorials package for V2.3.3](#)
- [Tutorials package for V2.2](#)
- [Tutorials package for V2.1.1](#)
- [Tutorials package for V2.0 and V2.0.1](#)
- [Tutorials package for V1.3 and V1.3.1](#)

- [Training slides](#)

## Links

- [CNES freeware server](#)

## Outils

- [Pages liées](#)
- [Suivi des pages liées](#)
- [Pages spéciales](#)
- [Adresse de cette version](#)
- [Information sur la page](#)
- [Citer cette page](#)
- Dernière modification de cette page le 8 novembre 2019 à 10:10.
- [Politique de confidentialité](#)
- [À propos de Wiki](#)
- [Avertissements](#)

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