

# Catégorie:User Manual 4.12 Attitude

De Wiki

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## Introduction

This section describes attitude features of Patrius: attitude laws, slew, guidance, etc.

## Applicable and Reference Documents

### Applicable Documents

**[A1]** *CDCF - Fonctions de Base du Patrimoine de Dynamique du Vol*, V1.2, SIRIUS-CF-DV-0049-CN, 2011.

**[A2]** *Dossier de réutilisation Orekit et Commons Math*, V1.0, SIRIUS-DLR-DV-0080-CN, 2010.

### Reference Documents

None applicable.

## Overview

The Attitude package of the PATRIUS library has been developed according to the SIRIUS Scope Statement **[A1]**. The themes developed are described hereafter :

### Directions

Implementation of directions of space that can evolve in time.

### Attitude laws

Several attitude laws are available. These laws were originally designed for orbit determination needs: in order to broaden their applications, a wrapper object has been created to meet the spacecraft attitude field needs.

### Attitudes sequence

Implementation of an attitudes sequence for orbit determination: it is possible to define an

attitude law as a series of attitude laws in the context of a propagation.

#### Attitude legs sequence

Implementation for spacecraft attitude field of an attitude sequence: it is possible to define an attitude leg as a series of attitude legs.

#### Attitude composition

Implementation of an object that enables to define an attitude law as a composition of several laws.

#### Orientation

Orientations are similar to attitude providers except that it returns only one angle.

#### Slew

Implementation of slew. Slews are used in the attitudes sequence to define the transition between two laws. Slews are splits into two functions: slew computations through dedicated classes and slew realization.

#### Kinematics

Implementation of a tool box for kinematics calculations.

#### Guidance command

Implementation of the ground and the on-board guidance commands. The first one is computed, the second one is simulated. In both cases, it should be possible to compute the guidance command from a law and to consider the guidance command itself as a law.

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