Catégorie:User Manual 3.3 Attitude

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Sommaire

Introduction

Orekit stands for ORbit Extrapolation Kit. Therefore, this library is designed for orbit determination. To that purpose, Orekit provides, among others, simple attitude laws in order to compute surface forces such as drag or solar pressure radiation.
Sirius is a flight dynamics software based on Orekit and Commons Math libraries. Its purpose is more general than orbit determination, it includes also spacecraft attitude field aspects.
Based on the existing conception, we will present in this section the new attitude elements that extends the current possibilities. Concepts like attitude laws, slew, guidance command... will be discussed here.

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 in Orekit library. 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, in the Orekit library: 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. Orekit already offers this possibility (by the attitudes sequence) but for the orbit determination field only.

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

Slew
: Implementation of slew. Slews are used in the attitudes sequence to define the transition between two laws.

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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- Cette page a été consultée 182 fois.

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