

Abstract

Space debris represents an increasingly significant risk to human activities in space. The population of space debris is growing, and it is necessary to stabilize this growth. One possible solution is the active removal of space debris objects. For this purpose, it is essential to know the rotational properties of the object. These properties change over time under the influence of various torques. Long term monitoring of the rotational properties of objects helps determine the future evolution of these properties, while also enabling the study of the torques responsible for these changes.

One of the methods used to determine the attitude state of an object is the analysis of light curves. A light curve is a record of brightness variation over time and is directly influenced by the attitude of the object. This work focuses on determining the attitude state of space debris objects from light curves. For this purpose, either archival data or original observations are used. The methods previously employed are extended in order to provide more information about the attitude state of the object.

The results of a long term observational campaign are discussed and used as input for a light curve generator. The aim of this work is to determine the attitude state of different types of space debris objects in various orbital regimes, as well as to identify the torques acting within these regimes.

keywords: space debris, torque, attitude state