Asteroid Families Portal

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Abstract

Here we describe a web portal for studying collisional asteroid families. The Asteroid Families Portal is an online platform that can be used to quickly assess and visualized data. The portal also implements several tools that allow to perform different kind of analysis directly online. This web-based science tool is designed as a platform for researchers involved in asteroid families, but it should also allow a broad scientific community to employ the standard scientific methods widely used to study families. This should be accomplished by implementing two levels of functionality for most of the implemented tools, the automatic and the advance mode.

1. Introduction

A possible way to cope with the large size and complexity of data accumulated in the recent years is development of web-portals. Such portals are often devoted to specific purposes, and allow scientists to easily review and analyze different data.

Here we present an open access web portal devoted to asteroid families, The Asteroid Families Portal[1] (AFP). Asteroid families form when a collision breaks apart a parent body into a large number of fragments of various sizes [5, 7]. These collisionally formed clusters are related to almost any kind of asteroidal science [1].

2. Available services

The AFP currently provides the following services:

- The Hierarchical Clustering Method (HCM) to obtained the most recent list of a family members [9]

- An automatic tool to identify interlopers among the potential family members [8]

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[1]http://asteroids.matf.bg.ac.rs/fam/

- The Backward Integration Method (BIM) to estimate ages of asteroid families younger than 10 Myrs [6]

- The proper orbital elements of asteroids, including active asteroids [3, 4]

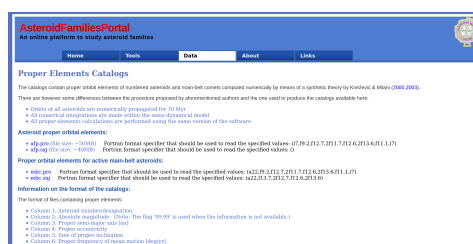- A list of the recent pear-reviewed papers on asteroid families

Figure 1: An example of a web-page at the Asteroid Families Portal devoted to the proper orbital elements.

3. Future Development and Updates

The AFP is foreseen to be continuously updated and upgraded. A new tool that will allow users to compute proper elements directly online is under development, and should be available soon. This will allow "on demand" computation of proper elements for asteroids (and some comets) not present in our catalogue of the proper elements.

We also aim to develop an algorithm that will provide different basic information about an asteroid family, such is the size of the parent body and its corresponding escape velocity, the slope of the magnitude-frequency distribution, etc.

Regular updates of all existing data will be performed. This primarily refers to the proper elements and the list of papers. Both of these should be updated at least bi-yearly, but if necessary, additional updates will be released.

Acknowledgements

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