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Abstract

System for prediction of fly by near earth objects

Kirubakaran Sebastian
ISAE, France

Abstract:

Statement of the Problem: Asteroids pose a complexity in understanding why and when they drift away from their orbits and possess a threat to earth. So, it is essential to analyze the asteroid behavior, to perform a likelihood estimation theory on planets and asteroids. The behavior of planets is well known, and it can be predicted too. This theory is being formulated as a suggestion to the calculation of a heavenly body hit from its neighboring allies. Since this theory revolves around the likelihood calculation, the relations are made based on astronomical observation. It can be said that in other words, likelihood can be interpreted as a threat parameter which purely depends on mutual gravitational attraction between bodies.

Methodology & Theoretical Orientation: Based on the actual astronomical observation, and effect of these parameters, this threat parameter can be related or formulated as follows: (i) Parameters under the influence of gravity (ii) Parameters under the orbital influence. The above model holds good for planets, dwarf planets and moons whose fundamental parameters like mass, gravity, orbital time, orbital speed is comparatively higher. Moreover, the above model holds good for heavenly objects whose shape is spherical, spheroid, circular.

Findings: But asteroids, comets and meteoroids are irregular shaped bodies and hence representing these bodies and assuming them to be spherical becomes absurd. Hence for the modification, the irregularity of surface, the closest approach to sun, the exorbitant orbital speeds are taken into consideration. An asteroid which is irregularly shaped and entire mass of the asteroid is pointed outwards.

Conclusion & Significance: The system developed provides an exhaustive prediction for numerous aspects of asteroid dynamics. The likelihood estimation also gives detailed information on threat posed by such Near-Earth Objects (NEOs). These algorithms and methods when appended and upgraded with existing satellite and warning system will provide a better and safer earth from its potential hazardous allies.

Biography:

Kirubakaran Sebastian has his expertise in Aerospace Mechanics and Avionics with specialization on Flight dynamics and Space Mechanics. His creative and dynamic methods have paved way for more robust research in the fields of scientific analysis of planetary sciences and orbital mechanics. He has developed this model after years of experience in research and evaluation in the field of orbital mechanics and Flight dynamics. Development of such a unique system will lay foundation stone for potential hazardous threat posed for earth. Attributing such a robust technology and dynamics, will truly enhance the existing methods and will provide a state of art prediction and detection systems.

Publication of speakers:

1. 1. Quintela M, Kvamme C, Bekkevold D, et al. Genetic analysis redraws the management boundaries for the European sprat. Evol Appl. 2020;13:1906–1922.

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