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PROBE RELATIONSHIP BETWEEN CHAOTIC ORBITAL BEHAVIOR OF CELESTIAL OBJECTS AND SOME UNEXPLAINED ASTRONAUTICAL CASES

Abstract

In this paper, two astronautical cases are mentioned and tried to explain their unexplained behavior with proposed principle intercommunicate with their chaotic orbital behaviors. One of them is NASA Juno mission and another one is 2000 EM26 asteroid. Juno is a NASA new frontiers mission to the Jupiter. Juno was launched on August 5, 2011 and will arrive in July 2016. Juno will also search for clues about how it formed, including whether Jupiter has a rocky core, the amount of water present within the deep atmosphere, and how it's mass is distributed. Mission station controllers at ESA and NASA have noticed that their spacecraft sometimes experience a strange variation in the amount of orbital energy they pick up from Earth during flybys, a technique routinely used to fling satellites deep into our Solar System. The unexplained variation is noticed as a tiny difference in the expected speed gained (or lost) during the passage. However, the variations are extremely small. ESA tracking stations carefully record signals from NASA's Juno spacecraft as it swings by Earth. During that high-speed event, radio signals from the 2870 kg Juno will be carefully recorded by ESA tracking stations. Engineers hope that the new measurements will unravel the decades-old 'flyby anomaly' an unexplained variation in spacecraft speeds detected during some swing-by. 2000 EM26 is a near-Earth and potentially hazardous asteroid. It was discovered on 5 March 2000 and observed through 14 March 2000.

Asteroid 2000 EM26 was discovered 14 years ago but when a robotic telescope service trained its eye on the predicted position, the asteroid was nowhere to be found. It is not uncommon for asteroids to go missing. The most likely scenario is that it is on a very different path from its expected trajectory, and the telescope wasn't looking in the right place. Generally, it is not unusual to be uncertain about any asteroid's future whereabouts. Some intrinsic non-linearity dynamical characters of celestial objects and their exchange with ambient celestial phenomena lead to inaccuracy in our prediction about analogous surveys. These evidences show that one common convincer elucidation for explain mentioned cases might be their chaotic orbital behaviors. Therefore, in this work unexpected behaviors of these cases are investigated based on nonlinear characteristics, bifurcation and chaos in their trajectories. Therefore this research will be answers to mentioned difficulties and demonstrate novelties in this area for space mission analyzer and designers.