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SPACE SYSTEMS SYMPOSIUM (D1)
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COLORING THE FUTURE - AN INNOVATIVE APPROACH FOR DEALING WITH "DOOMSDAY"
NEOS

Abstract

Near Earth Objects (NEOs) are objects that can impact Earth and cause damage. Sometimes, like in the Chelyabinsk meteor event on February 15, 2013, it can even cause serious damage both to property and people. Some 7,200 buildings in six cities across the region were damaged by the explosion's shock wave, and overall damage of 33 million USD. Russian authorities stated that 1,491 people, including 311 children, sought medical attention in Chelyabinsk Oblast within the first few days.

In the past, several ideas of spray-painting NEOs were suggested, allowing change in emissivity to react with photons as they radiate from the NEO's surface. (This force is called the Yarkovsky effect, after the Russian engineer who first described it around the turn of the 20th century).

Effective Space Solutions, a new space company developed an in-orbit microsatellite servicer, which has very energetic capabilities. This small 300 kg satellite packs more than 10 km/sec ΔV which enable it to reach almost any NEO.

This paper will demonstrate, and innovative and feasible operational concept that allows a commercial satellite to rapidly shift missions to spray paint any object threatening Earth. As a case study, we'll demonstrate a mission to spray-paint 99942 Apophis