

28th IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS (B4)
Constellations and Distributed Systems (7)

Author: Mr. Shashank Wadikhaye
Ramaiah Institute of Technology, India, 1ms19cs114@gmail.com

NEAR EARTH OBJECTS(NEOS) DETECTION USING CUBESAT CONSTELLATION ACTING AS
GIANT PHASED ARRAY RADIO ANTENNA.**Abstract**

The catalogue of Near Celestial Objects(NEOS), ranging between 1-10 km in diameter is relatively smaller as compared to the celestial objects in other range. Though they don't possess a threat to cause planet wide destruction, the impact from such objects can be pretty devastating.

Not a lot can be done to stop an asteroid impact other than creating an early warning system to track these celestial objects. There is physical limit to the span of an on-ground radio receiver but we require antennas with large span to collect the faint reflected radio wave coming from a far off object. Hence, an approach has been made in this paper to study these celestial objects with a constellation of CubeSat's acting as giant radar telescope.

The individual CubeSat in the constellation will send synchronized beam of radio waves to increase the intensity of signal and focus on desired blotch of space. The reflected waves will then be received by the constellation acting as a large phased array antenna.

Even though these celestial objects possess imminent danger, proper tracking through such a constellation will lead to increase in range to which near earth celestial objects can be tracked, reducing the risk of unexpected impact.