

20th IAA SYMPOSIUM ON VISIONS AND STRATEGIES FOR THE FUTURE (D4)  
Strategies for Rapid Implementation of Interstellar Missions: Precursors and Beyond (4)

Author: Dr. Peter Swan  
International Space Elevator Consortium, United States

Mr. William Page III  
Jet Propulsion Laboratory - California Institute of Technology, United States

TRANSFORMATIONAL RELEASE OF SCIENTIFIC PAYLOADS FROM THE APEX ANCHOR -  
ANY SIZE, EVERY DAY, ANYWHERE

**Abstract**

This research will describe the remarkable transformational characteristics of the Release from the Space Elevators Apex Anchor for Solar System Science Missions. Two main strengths enable the claim – Scientific Payloads, any size, any day, and anywhere in the solar system. The first is the ability to raise massive cargo against the Earth’s gravity while being friendly to our environment. The beauty of the Space Elevator is that it raises massive cargo with electricity [hence – “The Green Road to Space”]. The initial operations maximum capability of a Galactic Harbour could be as much as 30,000 tonnes per year. As the capacity matures, the yearly number increases to 170,000 tonnes. The second operational capability is that it may release the scientific spacecraft as frequent as each day towards solar system bodies with great velocity (minimum 7.76 km/sec). This article will describe advanced releases that greatly increase the initial velocity to include escape from the solar system. To set the stage, research within Arizona State University shows one example which explains the new conundrum quite well: Traditional launches from Earth to Mars are 8-month trips each and are separated by 26 months until the next opportunity, with delivery to the surface of about 1percent of the mass on the pad. When looking at releases from the Space Elevator Apex Anchor (at 100,000 km altitude) the release towards Mars could be every day. In addition, it can send massive amounts of cargo and has a spectrum of possible travel times – shortest from a normal release from the Apex Anchor is approximately 61 days.