

20th IAA SYMPOSIUM ON VISIONS AND STRATEGIES FOR THE FUTURE (D4)
Modern Day Space Elevators Entering Development (3)

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HEXAGONAL PRISMS STRUCTURE FOR TETHER USED FOR SPACE ELEVATOR.

Abstract

The concept of space elevator can easily change the way in which the mankind can access the space in much easier way, but the engineering problem with the the tether production because of no material with high strength to density ratio will result in problems for tether to hold heavier weight. So in this paper we will propose a tether design where we can use both the material available for the production of tether which is carbon nanotubes and diamond nano threads for development of tether, now in this proposal we have that hexagonal structure are by far the best structure for densely packed states so we can have tether with hexagonal structure and inside we have hexagonal prisms which can be fitted inside the tether, now the best thing of these hexagonal tether is they also form triangular prism structure inside the hexagonal structure which gives this structure an extra structural support and because of hexagonal being of symmetrical angles we have that stresses are divided into equal on each phases and we have high strength to density ratio at each meter of tether. Also we have problem with oscillation on tether due to different situation we can damp these oscillations by providing a counterweight at the fundamental distances from the earth port which can be devices placed for powering the mega structure etc to keep the balance and damp the oscillations.