Paper ID: 34657
oral

14th IAA SYMPOSIUM ON VISIONS AND STRATEGIES FOR THE FUTURE (D4)
Space Elevator and Tethers (3)

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# HOW DO REALISTIC MAGNETOSPHERIC FIELDS AFFECT SPACE ELEVATORS?

**Abstract**

We investigate the dynamics of a space elevator, as described by Edwards [2000] in the magnetospheric electric and magnetic fields near the Earth. The elevator is a thin ribbon of carbon nanotubes which extends approximately 15 Earth radii in the equatorial plane. As such it intersects the inner magnetosphere, the magnetopause, and at times the solar wind. Electric fields will induce currents in the cable. Those currents will interact with the magnetic field to apply a force on the space elevator cable. In a previous paper [Jorgensen and Patamia. 2013] we investigated the effects of large and extremely large storms on the elevator cables. We found that so-called superstorms can cause excursions of perhaps hundreds or thousands of kilometers of some parts of the cable. Those studies were carried out with symmetrical electric and magnetic fields. However the fields in the magnetosphere are not symmetrical, causing asymmetrical forces on the space elevator. This papers investigates the effects of these asymmetrical forces.