Inflatable reflector antenna for CubeSats: CATSAT mission and Cis-Lunar system design

CATSAT is a 6U CubeSat mission to demonstrate inflatable antenna technology in Low Earth Orbit. The mission is in collaboration between the University of Arizona and FreeFall Aerospace, Inc based in Tucson, Arizona. Our work presents updates to the CATSAT mission, having been delivered for launch and awaiting flight later this year. We discuss planned LEO mission operations and spaceflight qualification tests done to prove and deliver the inflatable antenna system.

Further developments to the inflatable antenna system are presented. These include an on-orbit rigidization system for the inflatable membrane and the incorporation of a beam steering system. These developments have led to inflatable antennas being studied for more complex mission architectures. On-going work on the next generation inflatable antenna system based on a 12U platform is presented in the context of Cis-Lunar and xGEO applications.