

Description of Research Project

The mission of the CASTOR (Cathode/Anode Satellite Thruster for Orbital Repositioning) satellite is to validate the performance and application of Diverging Cusped Field Thruster (DCFT) technology. This will be achieved by taking on-orbit state data to compare the degradation experienced by the DCFT to that of similar technologies such as Hall thrusters. Specifically, the mission objectives, with corresponding minimum success criteria are shown below:

- Operate the DCFT on orbit for 1500 hours, which is comparable to similar technologies
- Minimum Success: Demonstrate that the DCFT will operate on-orbit
- Measure the on-orbit performance, efficiency, and degradation of the DCFT during orbital maneuvers
- Minimum Success: Use the DCFT to provide a measurable change in velocity

In order to measure on orbit performance, efficiency and degradation of the DCFT it is essential to have communication system on the satellite in order to downlink telemetry and uplink commands to the satellite.