

GEOLOCATION BASED ON TDOA MEASUREMENTS TO FORMATION FLYING SPACECRAFT

Kátia Maier dos Santos (Instituto Tecnológico de Aeronáutica)

Willer Gomes dos Santos (Instituto Tecnológico de Aeronáutica)

Abstract: The GPS and the GLONASS are the most used satellite systems for localization and navigation. Position estimation is a very important task in the globalized world, and there are several techniques to accomplish this. The method used in this work is based on the Time Difference of Arrival (TDOA) measurements. Both GPS and GLONASS are satellite constellations, but the formation flying is a topic being studied a lot in the last years. This work used a satellite formation flying of 3 satellites in a circular orbit to geolocate an object on Earth's surface. A reconfiguration maneuver using the two impulse method is made and its impact on locating the object is analyzed. With the results, it was possible to conclude that the further the orbit passes above the real object, the higher is the error. Also, the reconfiguration maneuver did not have much impact on the location error in latitude and longitude.