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INTEGRATED GNSS AND MULTI SENSOR NAVIGATION SYSTEM FOR LEO SATELLITES

Abstract

Precise navigation of satellites in LEO is critical for space mission. Currently held on-board navigation receivers based on US GPS are liable to errors, denial due to hostile Radio Frequency (RF) interference, jamming, spoofing attacks or intentional errors from GPS satellite constellation owners. An integrated GNSS (Beidou/GLONASS/Galileo/GPS) and inertial sensors, accelerometers and gyroscopes based dead reckoning system is proposed for LEO satellites. GNSS navigation is based on Carrier phase measurement/ Real Time Kinematics (RTK) for less than meter accuracy. The proposed navigation system is robust during RF interference, jamming and spoofing attacks in LEO environments.