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CALIBRATION OF MAGNETIC FIELD SENSOR DATA USING FLIGHT RESULTS

Abstract

It is important to decrease the angular velocity of the satellite to perform most of the missions. This study used active stabilization method in a 1U CubeSat. CubeSats have limited space, mass and power. For the active stabilization, low power magnetic torquers which were implemented in printed circuit boards (PCB) to save the volume were used. B dot algorithm was used to stabilize the satellite. Magnetic field data measured by the magnetometer is a key factor when it comes to B dot algorithm. This paper discusses about the flight results from the magnetometer and the variations seen in the results. Magnetometer results might be different from the expected, due to non-orthogonality errors, scaling factors, offsets etc. Mainly this paper presents about the magnetometer data calibration using on orbit results. This system was applied in BIRDS3 satellite project where three CubeSats were deployed to the orbit on 17th June 2019 from International Space Station (ISS).