

Cubesat attitude determination and control system

In this paper, a complete Attitude Determination and Control System (ADCS) for nano-satellite is developed. The performance and stability of the control law is analyzed and temporal results are verified using simulation. The satellite studied is a triple cubesat (10cmx10cmx30cm) on a 6h-18h sun-synchronous orbit. This orbit is polar with an altitude around 700km and is also normal to the direction of solar rays. A three-axes-magnetometer and a star tracker are used as sensors. Actuation is done by three magneto-torquers and three reaction wheels. The precision in attitude required by the mission is one tenth of a degree, but the aim of this work is to do a technological demonstrator, so the system will be developed to get the best possible precision for a cubesat.