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Author: Mr. Josep Colomé Ferrer
Institut d'Estudis Espacials de Catalunya (IEEC), Spain, colome@ieec.cat

Prof. Ignasi Ribas
Institut d'Estudis Espacials de Catalunya (IEEC), Spain, iribas@ieec.cat
Mr. Daniel Sors Raurell
Institut d'Estudis Espacials de Catalunya (IEEC), Spain, sors@ieec.cat
Mr. Lluís Foreman Campins
Institut d'Estudis Espacials de Catalunya (IEEC), Spain, foreman@ieec.cat
Mr. Carles Sierra
Institut d'Estudis Espacials de Catalunya (IEEC), Spain, sierra@ieec.cat

THE PHOTSAT ASTROPHYSICS NANOSATELLITE MISSION

Abstract

PhotSat is a CubeSat mission developed by the Institute of Space Studies of Catalonia (IEEC) aimed at mapping and tracking visible stars in the sky. The mission's goal is to collect data over a two-year period while orbiting at an altitude of roughly 500km in Low Earth Orbit (LEO). The PhotSat satellite is equipped with a telescope that is designed to take measurements of the sky using a system of rotating mirrors. This approach allows the satellite to capture images of patches of the sky in various intervals of time, providing scientists with valuable data to study the properties and behavior of stars. The telescope will operate in diverse spectral bands. The data collected by PhotSat will be used for a range of scientific enquiries, including the search for exoplanets, the characterization of stars, and the observation of transitory phenomena. With the increasing interest in exoplanet detection and characterization, PhotSat's mission is timely, as it will provide valuable data for researchers looking to better understand the properties and behavior of stars that host exoplanets. PhotSat also represents an innovative way to complement current astrophysics missions with smaller, more affordable satellites. As a small satellite, PhotSat will be useful to gain insight into how to design, build, and operate future CubeSats for science purposes.