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The PhotSat mission: Ultraviolet and visible all-sky monitoring with a CubeSat

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PhotSat is the first astrophysical satellite developed from design to operations by the Institute of Space Studies of Catalonia (IEEC) and the Catalan industrial ecosystem. The main scientific goal of the mission is to obtain a full sky photometric monitoring of the approximately 40 million brighter astrophysical sources down to magnitude 15, performing studies of transients, exoplanets, solar system bodies, stars, galaxies, etc. By using a cubesat platform in low-Earth orbit, PhotSat will be able to access both the optical and ultraviolet ranges using two independent telescopes. Thanks to their wide field of view (8 degrees) the mission will be able to revisit each sky position with a cadence of only 2-3 days during the design lifetime of 2-3 years. PhotSat will provide dense light curves for all bright sources in the sky, simultaneously in three different passbands (one in the ultraviolet and two in the optical) using CMOS detectors. The PhotSat consortium is composed of several institutes, universities and industries in the Catalan ecosystem. In this sense, PhotSat is also helping to establish new collaborations and develop the joint capability of executing science experiments from their initial stages, including preliminary design, construction, launch, and operations; using off-the-shelf NewSpace technologies.

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