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PRETTY – First experience from a 3U CubeSat In-Orbit Demonstrator for GNSS-Reflectometry under grazing angle geometry

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The PRETTY CubeSat In-Orbit Demonstrator (IOD) Mission has been finally launched on 9th October 2023 into a Sun-Synchronous Orbit (SSO) in 560km height. The Launch and Early Orbit Phase (LEOP) was successful, meaning that communication with the CubeSat was possible, solar panels and VHF antennas are deployed. The commissioning phase is started. The 3U CubeSat hosts two scientific payloads, a radiation dosimeter and a novel GNSS-Reflectometry payload. The GNSS-reflectometer will be measuring earth surface under grazing elevation angles at the L5 frequency, in order to obtain altimetric altitude under various surface conditions (e.g., ocean waters or sea ice). The measurements will be done by correlating the direct and reflected signal (the so called interferometric approach), exploiting the full bandwidth of the GNSS signal.

An Algorithm Theoretical Baseline Document (ATBD) has been created within the scientific consortium and first simulation results have been conducted (and the results are analyzed within the consortium). For this presentation we will focus on the status of the satellite and present the first results obtained from space.