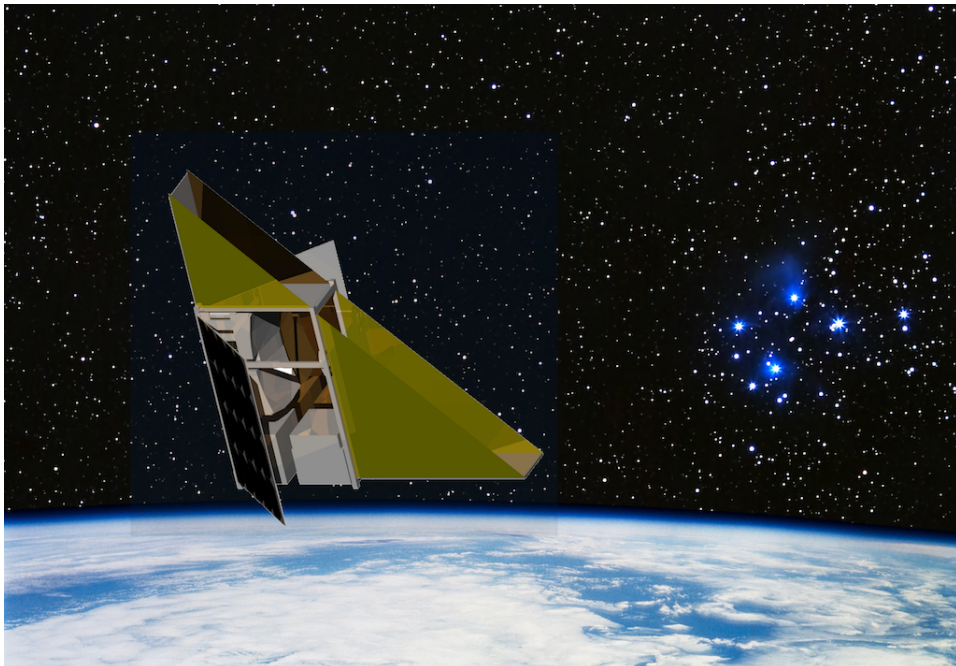


The CubeSpec mission: enabling spectroscopy from a CubeSat platform

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Webinaire le 01 février 2022 à 17h00
Zoom meeting ID: 962 8973 4891, Passcode: bAi51Y



CubeSpec is an in-orbit demonstration CubeSat mission in the ESA technology programme, developed and funded in Belgium. The goal of the mission is to demonstrate high-spectral-resolution astronomical spectroscopy from a 6-unit CubeSat. The prime science demonstration case for the in-orbit demonstration mission is to unravel the interior of massive stars using asteroseismology by high-cadence monitoring of the variations in spectral line profiles during a few months. The technological challenges are numerous. The 10x20cm aperture telescope and echelle spectrometer have been designed to fit in a 10x10x20cm volume. Under low-Earth orbit thermal variations, maintaining the fast telescope focus and spectrometer alignment is achieved via an athermal design. Straylight rejection and thermal shielding from the Sun and Earth infrared flux is achieved via deploying Earth and Sun shades. The narrow spectrometer slit requires arcsecond-level pointing stability using a performant 3-axis wheel stabilised attitude control system with star tracker augmented with a fine beam steering mechanism controlled in closed loop with a guiding sensor. The high cadence, long-term monitoring requirement of the mission poses specific requirements on the orbit and operational scenarios to enable the required sky visibility. CubeSpec is in the implementation phase, with a planned launch early 2024. A full engineering qualification model and a flight model will be constructed and tested in the course of 2022 and 2023. In this contribution we will give an overview of the mission, spacecraft and payload design, and the technology developments and the qualification status of the satellite and its components.

<https://fys.kuleuven.be/ster/instruments/cubespec>