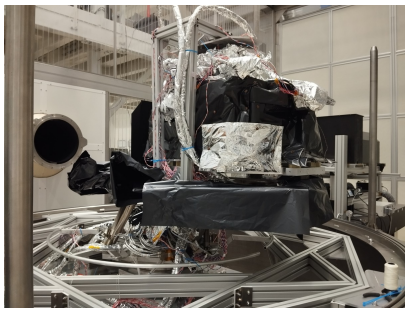
A research centre operated by the University of Liège, the Liège Space Centre (CSL) is employing 100 people and leading almost 60 projects for an annual turnover of €19 M. It has the advantage of being a non-profit research organisation, with a funding from industrial contracts and R&D collaborations.

Founded in 1959 as part of the Astrophysics Department of the University of Liege, the CSL owes its existence to its forerunner, the ESA, which wanted to have tests carried out and scientific optical instruments calibrated. Its reputation soon gained momentum and it became, from 1976, the chief centre for tests coordinated by the ESA. All scientific optical satellites had to undergo all their spatial qualification testing at CSL. These tests are carried out, specifically, in very large vacuum chambers that can reach up to 6.5 m in diameter, and even larger in a couple of years thanks to a major building extension! All large space integrators as well as numerous instrument primes are assigning to the CSL the responsibility to fully calibrate their instrument or to support them by providing Ground Support Equipment and facilities for the execution of qualification testing.



FLORIS instrument to be mounted on board the FLEX (FLuorescence EXplorer) satellite during the test campaign at CSL (launch scheduled 2026). © CSL

As a complement to these tests, the CSL designs optical instruments for use in space for ESA, NASA or JAXA with the support of BELSPO or through industrial contracts. It also develops thermal, mechanical and electronic engineering expertise in conjunction with the manufacture of these instruments. Finally, the CSL forms technological partnerships for R&D projects with Walloon and European industries as well as with other research centers. The aim of these upstream research projects is the development of technologies that can be used in space.

The CSL is involved in numerous scientific space missions, with a peculiar focus on ultraviolet imagers for heliospheric missions and for solar wind missions: a better understanding of our sun dynamics and the propagation of sun particles is the foundation of life on earth, summarized by the so-called space weather! The CSL has indeed over the last decades developed a deep expertise in the engineering of sun-watching instrumentation and auroral imagers with the scientific expertise of the Royal Observatory of Belgium.

Following the Extreme UV Imager (EUI) for Solar Orbiter, the CSL is now involved in the VIGIL ESA mission, with the NASA instrument called JEDI. JEDI (Joint EUV coronal Diagnostic Investigation) is a next-generation multi-thermal EUV Coronal Imager to study extreme space weather events and answer fundamental questions about the Solar Wind. The space weather forecasting is an essential tool for warning the astronauts against radiation flux but also the satellites offering daily services like navigation, telecommunication, and defense operations.

CSL's expertise in cryogenic cooling, which was inherited from space qualification, is now identified as an enabling technology for the next generation gravitational wave telescope, called Einstein Telescope (ET). The new facility, called ET-CRISTAL, is scheduled to be operational in early 2026. It will be used to validate cryo sensors and concepts related to ET.

Cryogenic assembly surrounding the suspended demo mirror of the ET interferometer. © CSL

The construction of new buildings also includes a new, large cleanroom and a 7-metre diameter vacuum chamber, which will be ready soon and will be dedicated to the large space missions of the next decades.

Since more than 60 years, CSL improves his expertise to deliver space instrumentations that help understanding the universe, our planet earth, and its connection with the solar dynamics for a safer life on earth.

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