

CSPEC STAP report April 2026

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CSPEC is the cold chopper spectrometer at the ESS. CSPEC TG5¹ is currently planned in November 2027. The science case for CSPEC is very broad and will address the needs of many different communities such as magnetism, soft matter, energy materials, life science. CSPEC has a strong focus on small samples, in situ and operando, kinetics etc. Most recent CSPEC paper: Rev Sci Instrum. 2021 Oct 1;92(10):105104. DOI: [10.1063/5.0059907](https://doi.org/10.1063/5.0059907). In this STAP report, we provide an overview of the status of the main components. More details will be given during the talk at the STAP meeting.

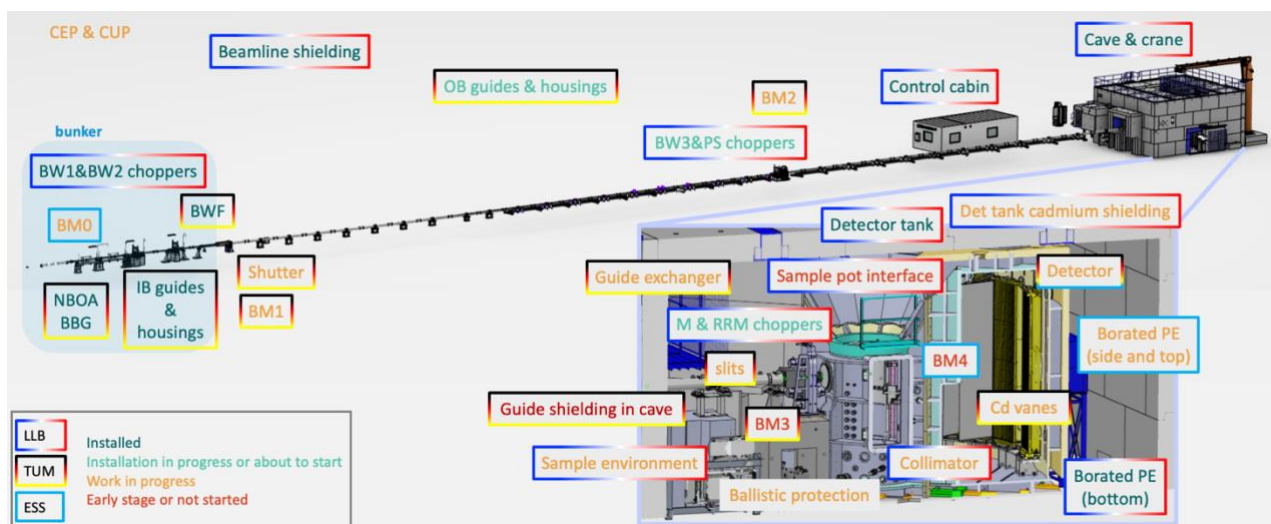


Figure 1 Model of the instrument and summary of the status of different components (see color code)

Staff

Christian Balz, Instrument Scientist, started in January. NSS pool designers have been assigned to some tasks for CSPEC (e.g. slits and detector tank shielding), but some design tasks are still waiting for resources (e.g. collimator drive). As discussed during the last STAP meeting, we identified a list of components to be completed after TG5.

Guides and housings

NBOA and BBG (first guide elements), BWF (bunker wall feedthroughs), and in-bunker guides are installed. Out-of-bunker installation is progressing (ca 48 m installed). The design and procurement of the last piece of guide is ongoing. The focussing nose and the guide exchanger will be postponed after TG5.

Shutter

We are modifying the shutter, and we expect it to be ready in August.

Choppers

BW1 and BW2 choppers are installed in bunker. BW3, PS, M and RRM choppers will be installed in May. Tests will be performed as soon as we have availability from the ESS chopper group.

Cave and control cabin

The control cabin and cave installation are finished (energisation excluded).

Electrical installation, utilities installation, motion control (common projects)

Common Electrical Project is progressing, with preliminary design review done in February. Preliminary meetings were done with the Common Utilities Project, and we received the offer for the Motion Control and Automation.

Beam Monitors

CSPEC received the offer to officially join the common project in March. The technical specifications were agreed long time ago and are unchanged.

¹ Final ESS internal review, corresponding to the end of construction phase with relative documentation and licensing.

Radial oscillating collimator

The collimator is at the ESS. The collimator drive is in preliminary design stage (ESS design resources have been requested to finish the preliminary design). The detailed/manufacturing design will be outsourced to an external company. The installation is planned for November 2026.

Detector tank

The detector tank is installed and tested. The gate valve mechanism will need some additional work both in terms of functionality and documentation (CE marking). The beamstop is installed. The installation of the cadmium is planned in June. Borated polyethylene was installed under the tank. A preliminary design was done for shielding the sides and the top. NSS is managing a common project for the spectroscopy instruments and the design and procurement for CSPEC is currently on hold. The detector integration design is progressing and planned to be ready for the arrival of the first module.

Detectors

The first multitube module is being tested at the ILL, including tests with the ESS acquisition system. The FAT and shipping to the ESS are planned for June. There are some delays in the supply of the tubes for the next modules. The fully automated gas handling system is under development with Siga GmbH. An FAT in March was not successful. More verifications are planned for early April, to then schedule a new FAT. ³He gas sufficient for the first module is at the ESS. The delivery of the remaining supply is schedule along the module production.

Instrument control, data acquisition, transformation and analysis

Requirements for hot commissioning regarding data transformation have been discussed with the IDSs. For data analysis, a first official release of EasyDynamics is available here: <https://easyscience.github.io/dynamics-lib>

Hot commissioning and first science

The CSPEC team will profit from the experience of the first instruments, especially BIFROST. Plans are ongoing to ensure the participation of the CSPEC scientists to the hot commissioning on BIFROST. This experience will shape future detailed plans for hot commissioning on CSPEC, with better educated guesses on the actual power and stability of the source. The support and experience of the in-kind partners during hot commissioning will also be extremely valuable. Following the experience of the T1 instruments, we will organise a CSPEC first science meeting in the first half of 2027. The details, such as the synergy with MIRACLES and how to manage the broad scientific case, are under discussion.

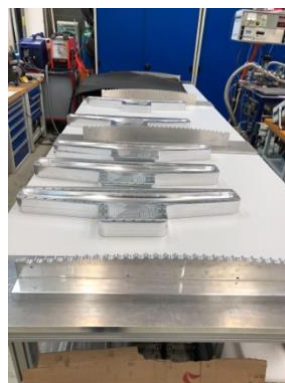
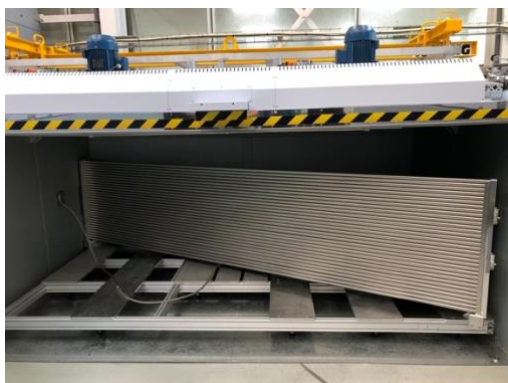


Figure 1. Left: the first module at the ILL; Right: plates ready for modules 2-5.

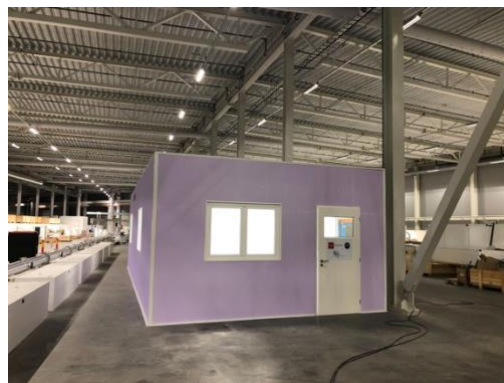


Figure 2. Left: guide installation outside bunker; Right: lights on in the control cabin with the temporary energization.