

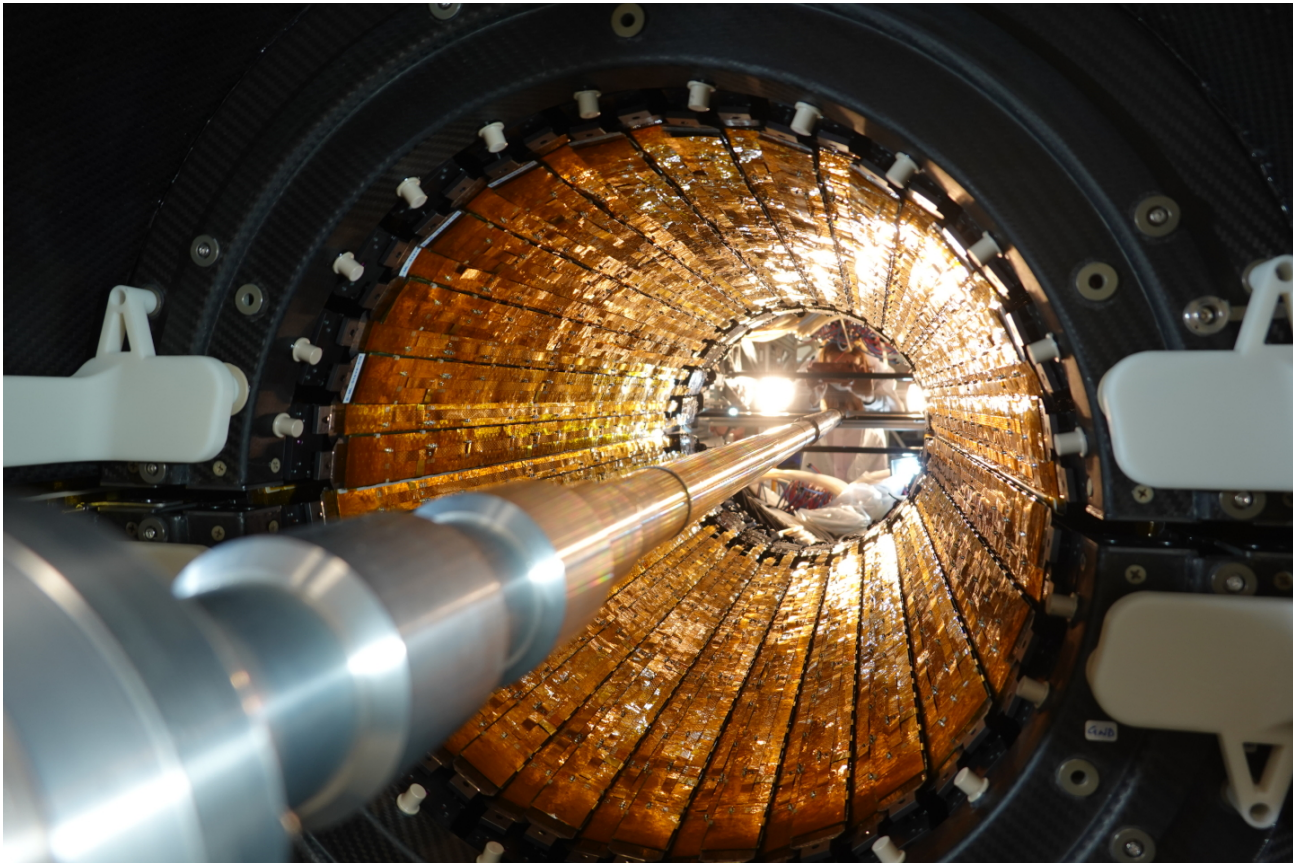


Voir en français ([//fr/news/news/experiments/ls2-report-upgraded-inner-tracking-system-joins-alice-detector](https://fr/news/news/experiments/ls2-report-upgraded-inner-tracking-system-joins-alice-detector)).

LS2 Report: An upgraded Inner Tracking System joins the ALICE detector

The two barrels of the largest pixel detector ever built have been successfully lowered into the cavern and stand ready for commissioning

26 MAY, 2021



[//cds.cern.ch/images/ALICE-PHO-ITS-2021-001-32](https://cds.cern.ch/images/ALICE-PHO-ITS-2021-001-32)

The outer barrel of the Inner Tracking Device was installed in March, two more before the inner barrel which completed it. (Image: CERN)

After two nerve-wracking months dedicated to the installation of the ALICE detector's new Inner Tracking System (ITS), Corrado Gargiulo's mechanical engineering team, in charge of the installation, can relax: the delicate procedure has been successfully completed and ALICE's innermost subdetector is poised to collect its first data in the coming weeks.

With its 10 m² of active silicon area and nearly 13 billion pixels, the new ITS is the largest pixel detector ever built. The detector lies sandwiched between the beam pipe and the Time Projection Chamber, **which was installed in 2020** (<https://home.cern/news/news/experiments/alice-tpc-upgraded>), deep in the ALICE detector. By reconstructing primary and secondary particle vertices and improving the momentum and angle resolution for particles reconstructed by the Time Projection Chamber, the ITS is instrumental in identifying the particles born out of the powerful lead-lead collisions in the core of the ALICE detector.

The upgrade of the ITS will significantly increase the resolution of the vertex reconstruction, making the subdetector fit for future runs with higher luminosity, as part of a comprehensive overhaul of ALICE's subdetectors striving for this very objective. The current upgrade relies on new pixel sensors called ALPIDE, which also make up **the new Muon Forward Tracker** (<https://home.cern/news/news/accelerators/alice-takes-leap-forward-major-new-installation>) (MFT), installed a few months ago. Each of those chips contains more than half a million pixels in an area of 15 × 30 mm² and features an impressive resolution of about 5 μm in both directions – the secret to the subdetector's improved performances. They are organised in seven layers, the innermost three forming the inner barrel, while the outermost four make up the outer barrel. The collected data is then transmitted with a bit rate of up to 1.2 Gb/s to a system of about 200 readout boards located 7 m away from the detector. The data is then aggregated and eventually sent to ALICE's computing farm, where it is sequenced and processed.

SETTINGS

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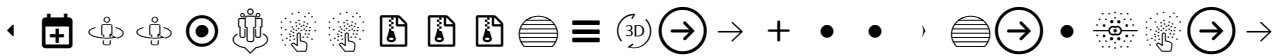
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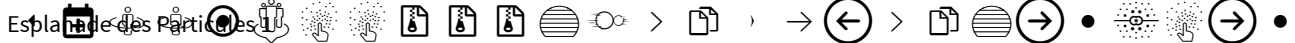
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