

New *Behind the Science* feature explores the technology helping CERN investigate the matter–antimatter mystery

A closer look at the photodetection work supporting the LHCb Scintillating Fiber Tracker upgrade.

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Hamamatsu Photonics Europe has published a new *Behind the Science* feature taking readers inside one of CERN's most ambitious detector upgrades: the LHCb Scintillating Fiber Tracker.



Photo: Opening of the LHCb detector in early December 2018. Photo courtesy of Maximilien Brice/CERN

Overview

The article introduces the science and engineering behind the tracker, which helps physicists' study rare particle interactions and investigate one of the most compelling questions in modern physics: why the universe appears to be made almost entirely of matter, rather than equal amounts of matter and antimatter.

The feature provides a clear entry point into how the SciFi Tracker was designed and built, highlighting the people, technologies, and challenges involved, from detecting faint flashes of light to ensuring stable performance in one of CERN's most demanding environments.

"The LHCb SciFi Tracker placed unique demands on the photodetectors, combining high radiation exposure, high hit rates, and the need for low-noise operation at cold temperatures over many years of operation," said Marius Metzger, Sales Manager at Hamamatsu Photonics.

"Together with the LHCb collaboration, we developed SiPM arrays optimized for low-temperature operation and long-term radiation tolerance, providing the performance and reliability required for precise charged-particle tracking throughout the detector lifetime."

The new feature provides additional context for readers interested in how the SciFi Tracker was engineered and built, highlighting selected engineering challenges and collaboration behind the detector. It adds a clear and accessible overview of the photodetection work that supports the tracker's role within the LHCb upgrade.

For further details on the [Behind the Science](#) series of articles and the experiments featured, please [contact us](#).