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First experience with the Mu3e Vertex detector construction

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The Mu3e experiment searches for the lepton flavour violating decay μ⟶ eee with an ultimate aimed sensitivity of 1 event in 10^16 decays in phase 2. This goal can only be achieved by reducing the material budget per tracking layer to X/X0 ≈ 0.1 %. For this purpose, gaseous helium is chosen as coolant, while High-Voltage Monolithic Active Pixel Sensors (HV-MAPS) thinned to 50 μm constitute the baseline for the Vertex detector. As the Phase 1 detector is in production, this talk will focus on the first achievements and solutions adopted for the construction of the Vertex detector. Located around the muon stopping target, the Vertex detector is designed to reconstruct the tracks of low energetic electrons coming from the muon decays. The light and compact experimental design poses unique challenges to its construction, from the characterization of the sensors to the implementation of the services. Several of these aspects will be discussed in this talk, along with the integration of the final system.

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