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Analysis of test beam data by global optimization methods

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Successful track reconstruction in a silicon tracking device depends on the quality of the alignment, on the knowledge of the sensor resolution, and on the knowledge of the amount of material traversed by the particles. We describe algorithms for the concurrent estimation of alignment parameters, sensor resolutions and material thickness in the context of a test-beam setup. They are based on a global optimization approach and are designed to work both with and without prior information from a reference telescope. We present results from two beam tests with sensors designed for the Belle II Silicon Vertex Detector. We also discuss whether and how the global optimization approach can be transferred from a simple test-beam setup to a full-scale tracker.

quote your primary experiment

Belle II

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