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Construction and Quality Assurance of the Belle II Silicon Vertex Detector

The Belle II experiment at the interaction point of the SuperKEKB $e+e-$ collider at KEK, Tsukuba, Japan is expected to collect data corresponding to an integrated luminosity of 50 ab^{-1} that will allow to search for signals of beyond-the-standard-model physics via precision measurements and searches for very rare decays. At its heart lies a six-layer vertex detector consisting of two layers of pixel detectors (PXD) and four layers of double-sided silicon microstrip detectors (SVD). Precise vertexing as provided by this device is essential for measurements of time-dependent CP violation. Crucial aspects of the SVD assembly are precise alignment, as well as rigorous electrical and geometrical quality assurance. We present an overview of the construction of SVD, including the precision gluing of SVD component modules and the wire-bonding of various electrical components. We also discuss the electrical and geometrical quality assurance tests.

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