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Young Scientist Forum : Fast and reliable Tracking for the High-Level-Trigger at Belle II

Tuesday, 7 March 2017 12:00 (15 minutes)

The Belle II detector is currently being built in Tsukuba, Japan and will record e^+e^- collision events at a record-breaking instantaneous luminosity of $8 \cdot 10^{35}$ cm^{-2}s^{-1} which is delivered by the SuperKEKB collider. Such a large luminosity is required to significantly improve the precision on measurements of B, D and τ decays to probe for signs of physics beyond the standard model.

Luminosity- and beam-size dependent background processes make up a large part of the measured events and an early software-based trigger, which combines the measurements of the individual sub-detectors, is required to filter the data and only store events which are of interest to physics analyses.

Tracking, especially in the central drift chamber (CDC), plays a major role here, as it can provide variables needed for a correct event classification in a fast and reliable way. This talk will present the planned High-Level-Trigger scheme for Belle II and especially the chosen tracking concepts to reach the required speed and reliability as well as some results on the runtime and the efficiency of the algorithm.

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Track Classification: 9 : Real Time Pattern Recognition