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Run Dependent Monte Carlo at Belle II

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The Belle II experiment at the SuperKEKB accelerator in Tsukuba, Japan, searches for physics beyond the Standard Model, with a focus on precise measurements of flavor physics observables. Highly accurate Monte Carlo simulations are essential for this endeavor, as they must correctly model the variations in detector conditions and beam backgrounds that occur during data collection. To meet this requirement, the "run-dependent" Monte Carlo has been developed. This approach incorporates time-dependent detector conditions and beam-induced backgrounds collected via random triggers, allowing for different conditions with a granularity of just a few hours. In this talk, we will discuss the procedures and challenges associated with producing run-dependent Monte Carlo simulations for Belle II. We will also highlight the improvements these simulations offer over traditional "run-independent" Monte Carlo methods.

Secondary track

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