



Contribution ID: 762

Type: **Parallel Talk**

CP Violation sensitivity at the Belle II Experiment

Friday, 7 July 2017 17:45 (15 minutes)

The measurement of the time-dependent CP violation parameters for B-meson decays is crucial for tightening the constraints on the unitarity triangle and for the search of new physics beyond the Standard Model.

A clean environment for the study of B decay channels is provided by B-factories. With a design luminosity of $8 \cdot 10^{35} \text{ cm}^{-2} \text{ s}^{-1}$, leading ultimately to an integrated luminosity beyond 50 ab^{-1} , the new B-factory SuperKEKB will exceed the record instantaneous luminosity of its predecessor KEKB by a factor of 40. The new Belle II detector will exploit the expected high statistics data sample thanks to a major upgrade of the tracking system, including a novel pixel vertex detector in its innermost part. Additionally, the detector capabilities will be complemented by substantial improvements in the reconstruction software.

We develop a strategy for CP violation analysis in order to maximally exploit the new data set and to characterize the sensitivity of Belle II for various benchmark B decay channels.

Experimental Collaboration

Belle II

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Session Classification: Flavour and symmetries

Track Classification: Flavour Physics and Fundamental Symmetries