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Semileptonic and leptonic B decay results from early Belle II data

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Summary

The Belle II experiment at the SuperKEKB energy-asymmetric e^+e^- collider is a substantial upgrade of the B factory facility at the Japanese KEK laboratory. The design luminosity of the machine is $8 \times 10^{35} \text{ cm}^{-2} \text{ s}^{-1}$ and the Belle II experiment aims to record 50 ab^{-1} of data, a factor of 50 more than its predecessor. From February to July 2018, the machine has completed a commissioning run, achieved a peak luminosity of $5.5 \times 10^{33} \text{ cm}^{-2} \text{ s}^{-1}$, and Belle II has recorded a data sample of about 0.5 fb^{-1} . Main operation of SuperKEKB has started in March 2019. In this presentation we show first results from studying missing energy signatures, such as leptonic and semileptonic B meson decays based on early Belle II data. We report first studies on re-measuring important standard candle processes, such as the abundant inclusive $B \rightarrow X \ell \nu$ and $B \rightarrow D^* \ell \nu$ decays. Furthermore, we will also present an overview of the semileptonic B decays that will be measured in the upcoming years at Belle II and discuss prospects for important B-anomalies like $R(D)$ and $R(D^*)$, as well as other tests of lepton flavor universality.

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