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Results and Prospects of Radiative and Electroweak Penguin Decays at Belle (II)

In the recent years, several measurements of B-decays with flavor changing neutral currents, i.e. $b \to s$ transitions hint at deviations from the Standard Model (SM) predictions.These decays are forbidden at tree-level in the SM and can only proceed via suppressed loop level diagrams. Rare decays of B mesons are an ideal probe to search for phenomena beyond the SM, since contributions from new particles can affect the decays on the same level as SM particles.

The Belle II experiment is a substantial upgrade of the Belle detector and operates at the SuperKEKB energy-asymmetric e^+e^- collider. Early physics goals of the Belle II physics program are to rediscover these rare decays. Radiative $b \to s\gamma$ decays is already rediscovered with only a small dataset of Belle II and we are aiming to rediscover the electro-weak penguin $b \to s\ell\ell$ decays too. We present the first search for $B \to K\nu\bar{\nu}$ at Belle II. We will discuss about the prospects of these radiative and electroweak penguin decays with the expected $50ab^{-1}$ dataset of Belle II.

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