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The Belle II Experiment at SuperKEKB

Belle II is an intensity-frontier experiment at the SuperKEKB collider in Tsukuba, Japan. Over the coming decades, it will record the decays of billions of bottom mesons, charm hadrons, and tau leptons produced in 10 GeV electron-positron collisions. The experiment's low-background environment and precisely known kinematics enable high-precision measurements of hundreds of Standard Model (SM) parameters while probing for new particles at mass scales far beyond the direct reach of high-energy colliders. We project Belle II's sensitivity for key measurements - where it will be uniquely positioned or world-leading - over datasets ranging from 1 to 50 ab^{-1}. By exploring previously uncharted regions of non-SM parameter space with high precision, Belle II will either reveal new physics or set stringent constraints, guiding future experimental and theoretical efforts. Additionally, we outline near-term upgrades to the Belle II detector and SuperKEKB accelerator, which will enhance sensitivity in searches for new physics beyond the SM across flavor, tau, electroweak, and dark sector physics. These improvements will ensure that Belle II remains both complementary to and competitive with the LHC and other experiments.

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