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Monitoring Beam Backgrounds at Belle II with Scintillator Detectors

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Belle II is a high-luminosity B quark factory facility located at the SuperKEKB electron-positron collider at the KEK laboratory in Japan. The main goal of Belle II is the search for evidence of new physics beyond the standard model of particle physics, through measurements of CP violation, rare decays, and searches for forbidden decays. It will improve the sensitivity to new physics by 1 to 2 orders of magnitude compared to previous B factory experiments. Belle II is currently in its commissioning phase, with first physics collisions planned for 2018. Due to higher beam currents and smaller beam sizes, beam-related backgrounds will be larger in Belle II than the ones experienced in Belle, the predecessor experiment of Belle II. Because these backgrounds can result in radiation damage and degraded detector performance due to high occupancy, real-time monitoring of backgrounds rates is essential. This talk will present the design of a system of fast scintillation detectors arrayed around the Belle II interaction region with the goal of monitoring all major sources of background including injection background during the operation of Belle II.

Author: PIKHARTOVA, Helena (McGill University)

Presenter: PIKHARTOVA, Helena (McGill University)

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