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## A Visualization of the Belle II Detector Through Photon Conversions

*Wednesday 5 June 2019 11:30 (15 minutes)*

The Belle II experiment represents an exciting opportunity to study the properties of B meson decays and to explore the nature of CP-violation and rare decays through electron-positron collisions. Belle II is designed to operate at an instantaneous luminosity of  $8 \times 10^{35} \text{ cm}^{-2} \text{ s}^{-1}$ , 40 times that of previous B factory experiments. Following a successful commissioning run in 2018, the high luminosity data taking program has begun in early 2019. Optimal performance of the Belle II detector requires precise knowledge of the position and distribution of material within the detector. Using the detector's precise vertex reconstruction methods, analysis of the material makeup and geometry can be performed using photon conversions. Within the detector, gamma rays produced by bremsstrahlung undergo pair production as they interact with nuclei within detector material. These  $e^+e^-$  pairs propagate through the detector and are detected by tracking sub-detectors such as the Silicon Vertex Detector (SVD) and Central Drift Chamber (CDC). The path of these lepton pairs can then be reconstructed to the point of conversion within the material, and due to the relationship between the type of material and rate of photon conversions, a detailed analysis of the detector's material distribution can be performed. This presentation will discuss the analysis of photon conversions in early Belle II colliding-beam data and present quantitative and visual results of the distribution of material within the Belle II detector. This presentation will also discuss the future plans and goals of this materials study for Belle II!

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