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Belle-II calorimeter endcap upgrade

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The improvement of the electromagnetic calorimeter endcap is the primary hardware contribution of Canada to the Belle-II experiment. The very high luminosity and large associated backgrounds dictate technology improvements required to ensure the performance fulfills the physics needs, despite these backgrounds. Meeting those challenging requirements will be achieved by replacing the crystals with pure Cs-I as well as changing the photo-detection technology and designing new signal conditioning and signal processing electronics. Validation of those technology choices based on simulations estimating the background level and the detector response will be discussed. Providing proper beam background shielding is an important consideration, which is assessed concurrently. The optimal geometries and materials for those shields are determined from Geant4 detector simulations and must balance conflicting space and performance requirements without compromising the endcap mechanical structure. The overall mechanical integration of all components in the enclosure designed for the previous Belle iteration will also be presented.

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