Canadian Association of Physicists
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Contribution ID: **3110** Type: **Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

(G*) A study of hadronic tagged $B \to D^{(*)}\ell\nu$ at the Belle II experiment

Monday, 6 June 2022 11:00 (15 minutes)

With only 0.5% of the full projected $50\,\text{ab}^{-1}$ dataset, the Belle II detector is already a competitive high luminosity environment in which to study B decays with missing energy. At a centre of mass energy of the $\Upsilon(4S)$ resonance, Belle II is a B factory, producing approximately 1.1×10^9 $B\bar{B}$ pairs per ab^{-1}. Precise knowledge of one fully reconstructed B meson through the hadronic Full Event Interpretation (FEI) tagging algorithm provides strong constraints for any signal decay studied using the other B meson in the $B\bar{B}$ pair. In this talk, recent measurements of the signal decay $B \to D^{(*)}\ell\nu$ will be examined alongside the prospects of the $R(D)$ and $R(D^*)$ measurements, in which Belle II anticipates a result of unprecedented precision with as little as $5\,\text{ab}^{-1}$ of data, and a sensitivity that could exhibit indirect New Physics effects.

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