

Figure 1: This figure shows the ΔE distribution of B candidates in 410 pb^{-1} of collision data, in the mode $B \rightarrow D^{(*)}h$ where $h = \pi, \rho$. Events are required to contain at least three good tracks to purify the sample with processes of the type $e^+e^- \rightarrow \text{hadrons}$, while rejecting beam induced background, Bhabha scattering, and other low multiplicity background sources. The charged kaon and pion tracks are required to have impact parameters, $|d_0|$ and $|z_0|$ less than 0.5 cm and 3.0 cm respectively. Particle identification criteria (binary) > 0.6 is applied to K . The invariant mass of D^0 and D^+ are constrained in between $1.84 < M(K^-\pi^+, K^-\pi^+\pi^0, K^-\pi^+\pi^-\pi^+) < 1.89 \text{ GeV}/c^2$ and $1.844 < M(K^-\pi^+\pi^+) < 1.894 \text{ GeV}/c^2$, respectively. The ρ candidates are chosen within $|M(\pi^+\pi^0) - m_\rho| < 100 \text{ MeV}/c^2$. The D^{*+} candidates are required to have $0.143 < M(D^0\pi^+) - M(D^0) < 0.147 \text{ GeV}/c^2$ and D^{*0} candidates are required to have $0.14 < M(D^0\pi^0) - M(D^0) < 0.144 \text{ GeV}/c^2$. $q\bar{q}$ background is suppressed with $R2 < 0.3$ and 0.25 for $B \rightarrow D^{(*)}\pi$ and $B \rightarrow D\rho$ modes, respectively. An additional $\cos\theta_\rho > -0.8$ is applied for $B \rightarrow D\rho$ to reject high combinatorial background. Here, the signal region chosen is $M_{bc} > 5.27 \text{ GeV}/c^2$. The internal document reference is BELLE2-NOTE-PH-2019-039.

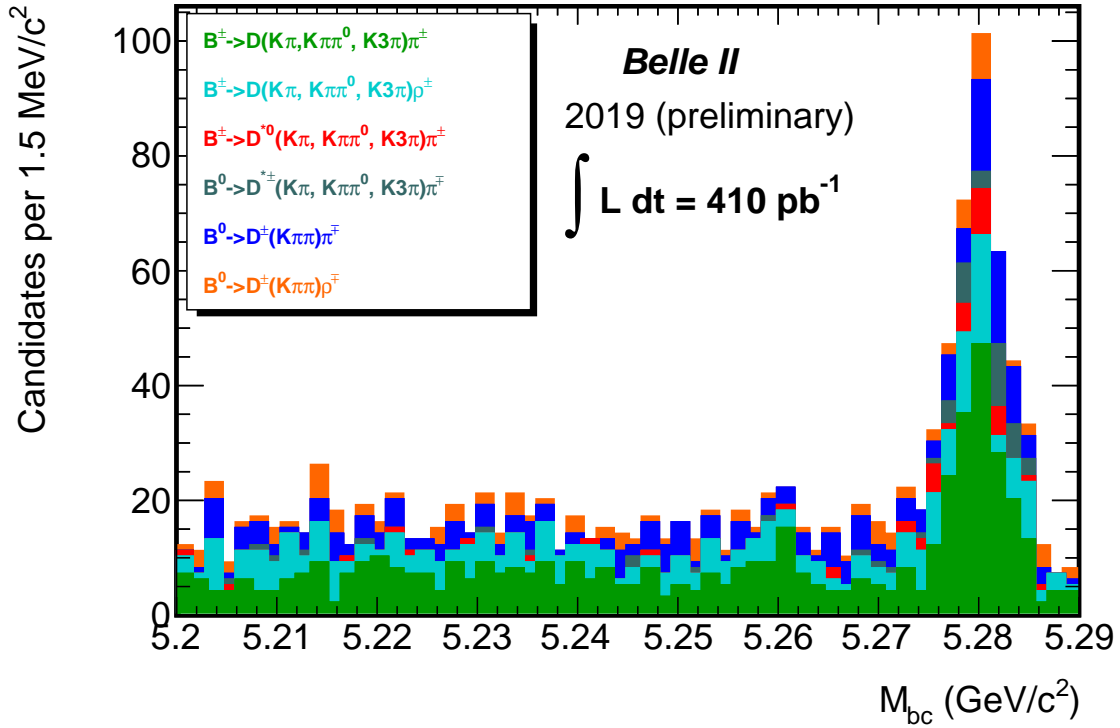


Figure 2: This figure shows the M_{bc} distribution of B candidates in 410 pb^{-1} of collision data, in the mode $B \rightarrow D^{(*)}h$ where $h = \pi, \rho$. Events are required to contain at least three good tracks to purify the sample with processes of the type $e^+e^- \rightarrow \text{hadrons}$, while rejecting beam induced background, Bhabha scattering, and other low multiplicity background sources. The charged kaon and pion tracks are required to have impact parameters, $|d_0|$ and $|z_0|$ less than 0.5 cm and 3.0 cm respectively. Particle identification criteria (binary) > 0.6 is applied to K . The invariant mass of D^0 and D^+ are constrained in between $1.84 < M(K^-\pi^+, K^-\pi^+\pi^0, K^-\pi^+\pi^-\pi^+) < 1.89 \text{ GeV}/c^2$ and $1.844 < M(K^-\pi^+\pi^+) < 1.894 \text{ GeV}/c^2$, respectively. The ρ candidates are chosen within $|M(\pi^+\pi^0) - m_\rho| < 100 \text{ MeV}/c^2$. The D^{*+} candidates are required to have $0.143 < M(D^0\pi^+) - M(D^0) < 0.147 \text{ GeV}/c^2$ and D^{*0} candidates are required to have $0.14 < M(D^0\pi^0) - M(D^0) < 0.144 \text{ GeV}/c^2$. $q\bar{q}$ background is suppressed with $R2 < 0.3$ and 0.25 for $B \rightarrow D^{(*)}\pi$ and $B \rightarrow D\rho$ modes, respectively. An additional $\cos\theta_\rho > -0.8$ is applied for $B \rightarrow D\rho$ to reject high combinatorial background. Here, the signal region chosen is $|\Delta E| < 0.05 \text{ GeV}$. The internal document reference is BELLE2-NOTE-PH-2019-039.