

Figure 1: This figure shows the invariant mass distribution of charm candidates in  $250 \text{ pb}^{-1}$  of collision data, in the mode  $D^+ \rightarrow K^-\pi^+\pi^+$ . 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. No particle identification criteria is applied. The  $D^+$  candidates are required to have a centre-of-mass momentum of greater than  $2.5 \text{ GeV}/c$  to select  $c\bar{c}$  events. The internal document reference is BELLE2-NOTE-PH-2018-004.

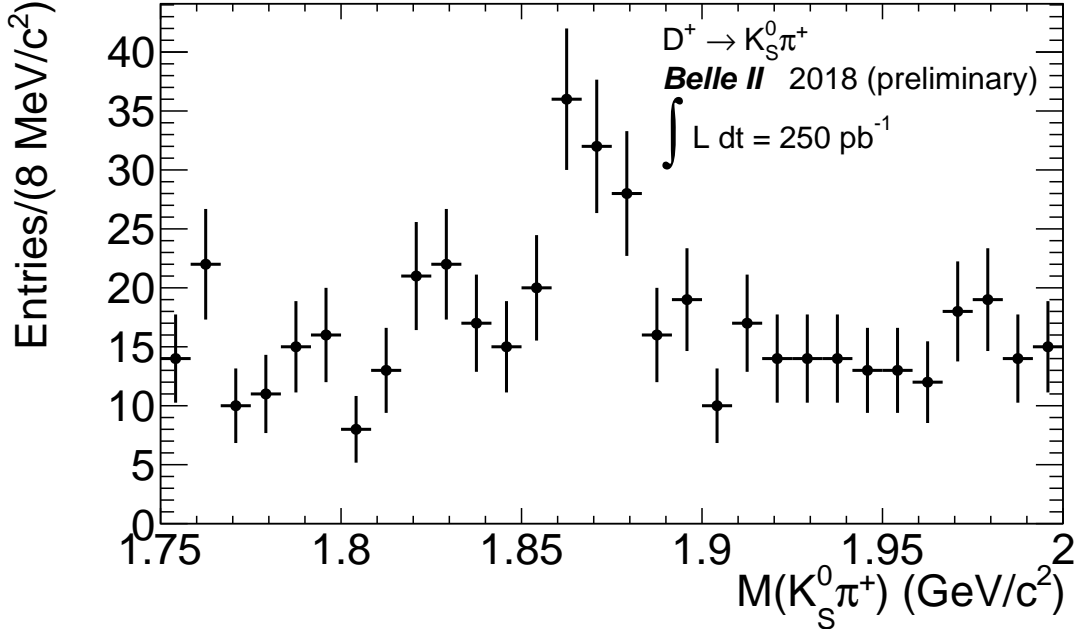


Figure 2: This figure shows the invariant mass distribution of charm candidates in  $250 \text{ pb}^{-1}$  of collision data, in the mode  $D^+ \rightarrow K_S^0 \pi^+$ . Events are required to contain at least three good tracks to purify the sample with processes of the type  $e^+e^- \rightarrow \text{hadrons}$ , while rejecting beam induced background, Bhabha scattering, and other low multiplicity background sources. The charged pion tracks from  $D^+$  are required to have impact parameters,  $|d_0|$  and  $|z_0|$  less than 0.5 cm and 3.0 cm respectively. No particle identification criteria is applied.  $K_S^0$  candidates decaying outside the beam pipe are selected with  $0.45 < M(\pi^+\pi^-) < 0.55 \text{ GeV}/c^2$ . A vertex fitter based on a Kalman algorithm is used to fit the vertex to reject candidates where the tracks do not originate from near a common decay point. An optimised  $K_S^0$  selection is done as mentioned in BELLE2-NOTE-PL-2018-016. The  $D^+$  candidates are required to have a centre-of-mass momentum of greater than  $2.5 \text{ GeV}/c$  to select  $c\bar{c}$  events. The internal document reference is BELLE2-NOTE-PH-2018-004.