



BELLE2-NOTE-PL-2020-016

Version 1.0

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## Reconstruction of decays

$D_s^+ \rightarrow \phi[K^+K^-]\pi^+, K_s^0[\pi^+\pi^-]K^+, \bar{K}^{*0}[K^-\pi^+]K^+$  **using proc11 data**

The Belle II Collaboration

### Abstract

This document contains the  $D_s^+$  mass plots reconstructed in the decays to following final states,  $D_s^+ \rightarrow \phi[K^+K^-]\pi^+, K_s^0[\pi^+\pi^-]K^+, \bar{K}^{*0}[K^-\pi^+]K^+$ . The plots were obtained using the data collected by Belle II during 2019 corresponding to integrated luminosity of  $8.8 \text{ fb}^{-1}$ . For detailed description of the analysis see: BELLE2-NOTE-PH-2020-049

1. PLOTS FOR APPROVAL:

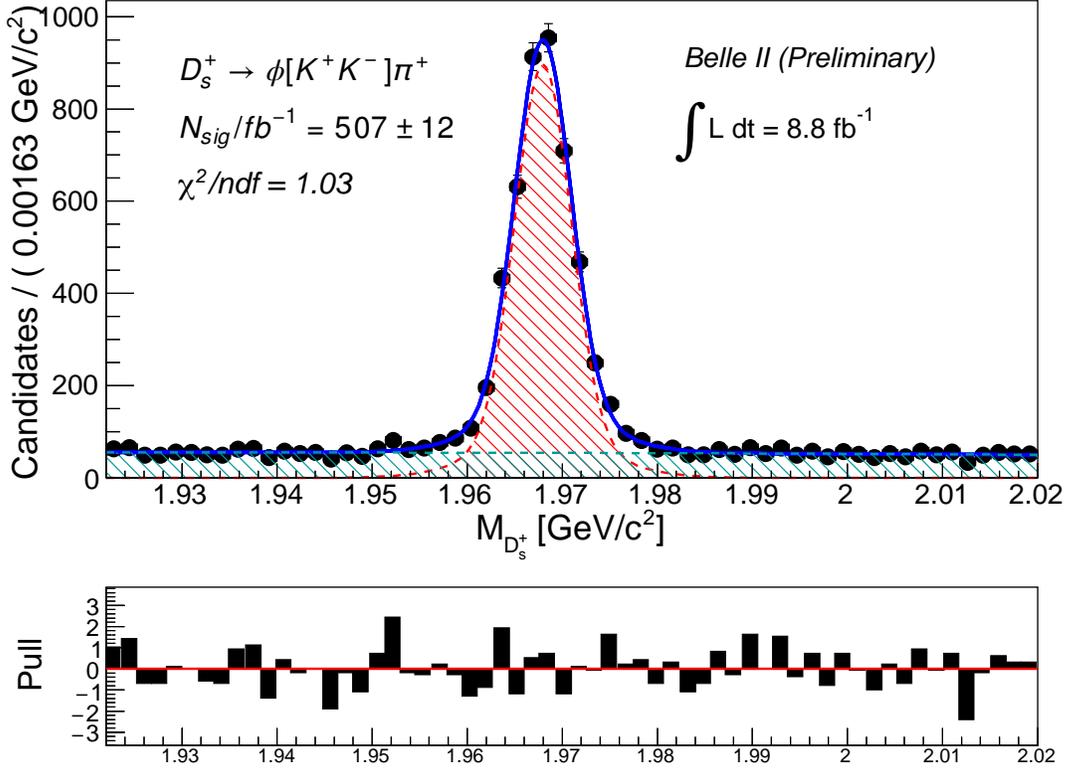


FIG. 1:  $M_{D_s^+}$  fit in the decay mode  $D_s^+ \rightarrow \phi[K^+K^-]\pi^+$ . For above plot we have used the data collected by Belle II during 2019 (proc11, exp7,8,10). The data corresponds to an integrated luminosity of  $8.8 fb^{-1}$ . We performed an unbinned extended maximum likelihood fit. Sum of two symmetric gaussian are used for signal fit and a 2nd order chebychev polynomial is used for background fit. From the fit we get  $N_{sig}/fb^{-1} = 507 \pm 12$ .

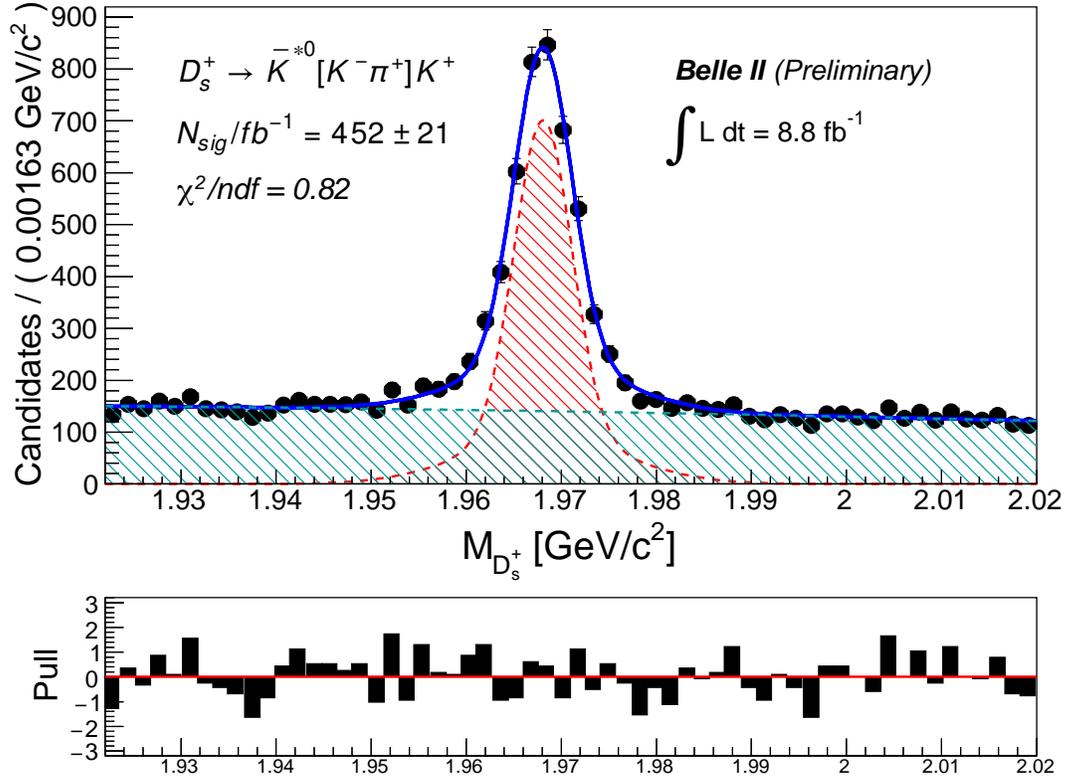


FIG. 2:  $M_{D_s^+}$  fit in the decay mode  $D_s^+ \rightarrow \bar{K}^{*0} [K^- \pi^+] K^+$ . For above plot we have used the data collected by Belle II during 2019 (proc11, exp7,8,10). The data corresponds to an integrated luminosity of  $8.8 fb^{-1}$ . We performed an unbinned extended maximum likelihood fit. Sum of two symmetric gaussian are used for signal fit and a 2nd order chebychev polynomial is used for background fit. From the fit we get  $N_{sig}/fb^{-1} = 452 \pm 21$ .

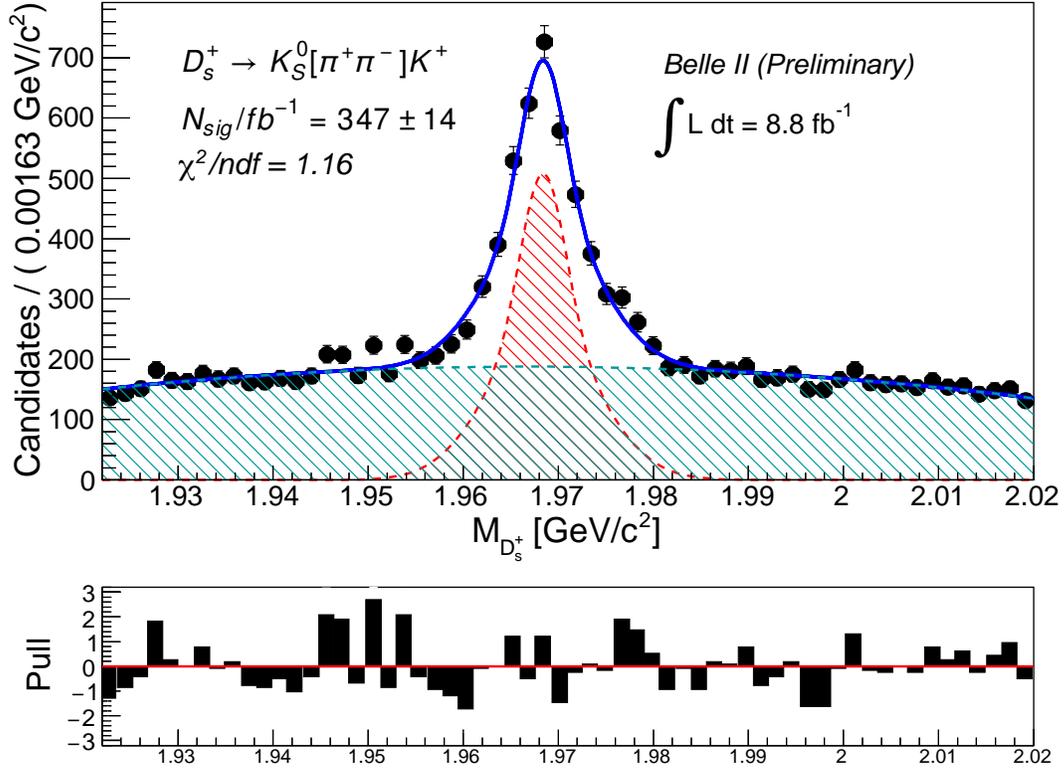


FIG. 3:  $M_{D_s^+}$  fit in the decay mode  $D_s^+ \rightarrow K_S^0[\pi^+\pi^-]K^+$ . For above plot we have used the data collected by Belle II during 2019 (proc11, exp7,8,10). The data corresponds to an integrated luminosity of  $8.8 fb^{-1}$ . We performed an unbinned extended maximum likelihood fit. Sum of two symmetric gaussian are used for signal fit and a 2nd order chebychev polynomial is used for background fit. From the fit we get  $N_{sig}/fb^{-1} = 347 \pm 14$ .