

Dalitz plot analysis of $B \rightarrow D D K$ decays

Wednesday, 20 May 2015 10:50 (20 minutes)

We present Dalitz plot analyses for the decays of B mesons to $D^- D^0 K^+$ and $D^0 \bar{D}^0 K^+$. We report the observation of the $D_{s1}^+(2700)$ resonance in these two channels and obtain measurements of the mass $M(D_{s1}^+(2700)) = 2699^{+14}_{-1}$ MeV/ c^2 and of the width $\Gamma(D_{s1}^+(2700)) = 127^{+24}_{-1}$ MeV, including statistical and systematic uncertainties. In addition, we observe an enhancement in the $D^0 K^+$ invariant mass around 2350–2500 MeV/ c^2 in both decays $B^0 \rightarrow D^- D^0 K^+$ and $B^+ \rightarrow D^0 \bar{D}^0 K^+$, which we are not able to interpret. The results are based on 429 fb $^{-1}$ of data containing 471×10^6 BB-bar pairs collected at the Y(4S) resonance with the BaBar detector at the SLAC National Accelerator Laboratory.

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Session Classification: Parallel Session 4