



Fig. 2 Invariant mass distribution for $B \rightarrow h^+ h^-$ decays [6] in the LHCb data before the use of the RICH information (*left*), and after applying RICH particle identification (*right*). The signal under study is the decay $B^0 \rightarrow \pi^+ \pi^-$, represented by the turquoise *dotted line*. The contributions from different b -hadron decay modes ($B^0 \rightarrow K\pi$ *red dashed-dotted line*, $B^0 \rightarrow 3\text{-body}$ *orange dashed-dashed line*,

$B_s \rightarrow KK$ *yellow line*, $B_s \rightarrow K\pi$ *brown line*, $\Lambda_b \rightarrow pK$ *purple line*, $\Lambda_b \rightarrow p\pi$ *green line*), are eliminated by positive identification of pions, kaons and protons and only the signal and two background contributions remain visible in the plot on the right. The *grey solid line* is the combinatorial background (Color figure online)