

Recent results on bottomonium studies at Belle

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Summary

We report new measurements of the total cross sections for $e^+e^- \rightarrow \Upsilon(nS)\pi^+\pi^-$ ($n = 1, 2, 3$) and $e^+e^- \rightarrow b\bar{b}$ from a high-luminosity scan of the m -energy range 10.63–11.05 GeV and determine masses and widths of the $\Upsilon(1S)$, $\Upsilon(2S)$ and $\Upsilon(3S)$ and update the $\Upsilon(1S)$ mass. Also revised are the branching fraction of $\Upsilon(1S) \rightarrow \gamma\eta_c(1S)$ and the $\eta_c(1S)$ mass and $(n = 1, 2)$ cross sections, where we find clear $\Upsilon(10860)$ and $\Upsilon(11020)$ peaks. We find evidence that $\Upsilon(11020) \rightarrow \Upsilon(10860)\pi^+\pi^-$ transitions proceed entirely via the $Z_b(10610)$ and $Z_b(10650)$ states. We report the analysis of the three-body $e^+e^- \rightarrow B^0\bar{B}^0\pi$ processes, including the Born cross section measurements and the first observation of the $Z_b(10610) \rightarrow B^0\bar{B}^0$ and $Z_b(10650) \rightarrow B^0\bar{B}^0$ transitions.

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