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Title:	Study of $\hat{1}^-$ and dipion transitions in $\hat{1}^-(4S)$ decays to lower bottomonia
Authors:	Bhardwaj, V. (/jspui/browse?type=author&value=Bhardwaj%2C+V.)
Keywords:	bottomonium KEKB energy
Issue Date:	2017
Publisher:	American Physical Society
Citation:	Physical Review D, 96 (5)
Abstract:	We study hadronic transitions between bottomonium states using 496 fb <sup>-1</sup> data collected at the $Y(4S)$ resonance with the Belle detector at the KEKB asymmetric energy $e^+e^-$ collider. We measure: $\sigma(Y(4S) \rightarrow \pi^+\pi^-Y(1S)) = (8.2 \pm 0.5(\text{stat.}) \pm 0.4(\text{syst.})) \times 10^{-5}$ , $\sigma(Y(4S) \rightarrow \pi^+\pi^-Y(2S)) = (7.9 \pm 1.0(\text{stat.}) \pm 0.4(\text{syst.})) \times 10^{-5}$ , and $\sigma(Y(4S) \rightarrow \eta Y(1S)) = (1.70 \pm 0.23(\text{stat.}) \pm 0.08(\text{syst.})) \times 10^{-4}$ . We measure the ratio of branching fractions $\frac{\sigma(Y(4S) \rightarrow \eta Y(1S))}{\sigma(Y(4S) \rightarrow \pi^+\pi^-Y(1S))} = 2.07 \pm 0.30(\text{stat.}) \pm 0.11(\text{syst.})$ . We search for the decay $Y(13D1,2) \rightarrow \eta Y(1S)$ , but do not find significant evidence for such a transition. We also measure the initial state radiation production cross sections of the $Y(2S,3S)$ resonances and we find values compatible with the expected ones. Finally, the analysis of the $Y(4S) \rightarrow \pi^+\pi^-Y(1S)$ events shows indications for a resonant contribution due to the $f_0(980)$ meson.
Description:	Only IISERM authors are available in the record.
URI:	<a href="https://arxiv.org/abs/1707.04973">https://arxiv.org/abs/1707.04973</a> ( <a href="https://arxiv.org/abs/1707.04973">https://arxiv.org/abs/1707.04973</a> ) <a href="http://hdl.handle.net/123456789/1848">http://hdl.handle.net/123456789/1848</a> ( <a href="http://hdl.handle.net/123456789/1848">http://hdl.handle.net/123456789/1848</a> )
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