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Title:	Measurement of the branching fraction and CP asymmetry in $B^0 \rightarrow \pi^0 \pi^0$ decays, and an improved constraint on $\bar{A}^2$
Authors:	Bhardwaj, V. (/jspui/browse?type=author&value=Bhardwaj%2C+V.)
Keywords:	CPviolation decay $B^0 \rightarrow \pi^0 \pi^0$ $752 \times 106$ BBpairs
Issue Date:	2017
Publisher:	Cornell University
Citation:	Physical Review D, 96 (11)
Abstract:	We measure the branching fraction and CP violation asymmetry in the decay $B^0 \rightarrow \pi^0 \pi^0$ , using a data sample of $752 \times 106$ BBpairs collected at the $\Upsilon(4S)$ resonance with the Belle detector at the KEKB $e^+e^-$ collider. The obtained branching fraction and direct CP asymmetry are $B(B \rightarrow \pi^0 \pi^0) = [1.31 \pm 0.19 \text{ (stat.)} \pm 0.19 \text{ (syst.)}] \times 10^{-6}$ and $ACP = +0.14 \pm 0.36 \text{ (stat.)} \pm 0.10 \text{ (syst.)}$ , respectively. The signal significance, including the systematic uncertainty, is 6.4 standard deviations. We combine these results with Belle's earlier measurements of $B^0 \rightarrow \pi^+ \pi^-$ and $B^\pm \rightarrow \pi^\pm \pi^0$ to exclude the CP-violating parameter $\phi_2$ from the range $15.5^\circ < \phi_2 < 75.0^\circ$ at 95% confidence level.
Description:	Only IISERM authors are available in the record.
URI:	<a href="https://arxiv.org/abs/1705.02083">https://arxiv.org/abs/1705.02083</a> ( <a href="https://arxiv.org/abs/1705.02083">https://arxiv.org/abs/1705.02083</a> ) <a href="http://hdl.handle.net/123456789/1732">http://hdl.handle.net/123456789/1732</a> ( <a href="http://hdl.handle.net/123456789/1732">http://hdl.handle.net/123456789/1732</a> )
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