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Title:	Measurement of the branching fraction of the decay $B \rightarrow \pi^+ \pi^- \ell^+ \ell^-$ in fully reconstructed events at Belle
Authors:	Bhardwaj, Vishal (/jspui/browse?type=author&value=Bhardwaj%2C+Vishal) Patra, Sourav (/jspui/browse?type=author&value=Patra%2C+Sourav)
Keywords:	Particles Decay Bottom Quark
Issue Date:	2021
Publisher:	American Physical Society
Citation:	Physical Review D, 103(11).
Abstract:	We present an analysis of the exclusive $B \rightarrow \pi^+ \pi^- \ell^+ \ell^-$ decay, where $\ell$ represents an electron or a muon, with the assumption of charge-conjugation symmetry and lepton universality. The study exploits the full $\sqrt{s}=10.58$ GeV data sample collected by the Belle detector, corresponding to $711 \text{ fb}^{-1}$ of integrated luminosity. Events are selected by fully reconstructing one B meson in hadronic decay modes, subsequently determining the properties of the other B meson. We extract the signal yields using a binned maximum-likelihood fit to the missing-mass squared distribution in bins of the invariant mass of the two pions or the momentum transfer squared. We measure a total branching fraction of $B \rightarrow \pi^+ \pi^- \ell^+ \ell^-$ $22.7 \pm 1.9 \text{ (stat)} \pm 3.5 \text{ (syst)} \times 10^{-5}$ , where the uncertainties are statistical and systematic, respectively. This result is the first reported measurement of this decay.
Description:	Only IISER Mohali authors are available in the record
URI:	<a href="https://doi.org/10.1103/PhysRevD.103.112001">https://doi.org/10.1103/PhysRevD.103.112001</a> ( <a href="https://doi.org/10.1103/PhysRevD.103.112001">https://doi.org/10.1103/PhysRevD.103.112001</a> ) <a href="http://hdl.handle.net/123456789/4531">http://hdl.handle.net/123456789/4531</a> ( <a href="http://hdl.handle.net/123456789/4531">http://hdl.handle.net/123456789/4531</a> )
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