

Reference = BHARDWAJ 16; PR D93 052016
Verifier code = BELLE

PLEASE READ NOW

*PLEASE
REPLY
WITHIN
ONE WEEK*

Normally we send all verifications for one experiment to one person, usually the spokesperson or data-analysis coordinator, who then distributes them to the appropriate people. Please tell us if we should send the verifications for your experiment to someone else.

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March 20, 2017

Dear Colleague,

- (1) Please check the results of your experiment carefully. They are marked.
- (2) Please reply within one week.
- (3) Please reply even if everything is correct.
- (4) IMPORTANT!! Please tell WHICH papers you are verifying. We have lots of requests out.
- (5) Feel free to make comments on our treatment of any of the results (not just yours) you see.

Thank you for helping us make the Review accurate and useful.

Sincerely,

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$c\bar{c}$ MESONS

NODE=MXXX025

NODE=M176

$X(3872)$

$$J^{PC} = 0^{+}(1^{++})$$

NODE=M176

First observed by CHOI 03 in $B \rightarrow K \pi^{+} \pi^{-} J/\psi(1S)$ decays as a narrow peak in the invariant mass distribution of the $\pi^{+} \pi^{-} J/\psi(1S)$ final state. Isovector hypothesis excluded by AUBERT 05B and CHOI 11.

AAIJ 13Q perform a full five-dimensional amplitude analysis of the angular correlations between the decay products in $B^{+} \rightarrow X(3872) K^{+}$ decays, where $X(3872) \rightarrow J/\psi \pi^{+} \pi^{-}$ and $J/\psi \rightarrow \mu^{+} \mu^{-}$, which unambiguously gives the $J^{PC} = 1^{++}$ assignment under the assumption that the $\pi^{+} \pi^{-}$ and J/ψ are in an S -wave. AAIJ 15AO extend this analysis with more data to limit D -wave contributions to $< 4\%$ at 95% CL.

See our note on “Developments in Heavy Quarkonium Spectroscopy”.

$X(3872)$ BRANCHING RATIOS

NODE=M176235

| $\Gamma(\pi^{+} \pi^{-} \chi_{c1})/\Gamma_{\text{total}}$ | | | | | Γ_{15}/Γ | |
|---|---|--------------------------|------|---|----------------------|--|
| VALUE | | DOCUMENT ID | TECN | COMMENT | | |
| YOUR DATA | not seen | ¹ BHARDWAJ 16 | BELL | $B^{+} \rightarrow \pi^{+} \pi^{-} \chi_{c1} K^{+}$ | | |
| YOUR NOTE | ¹ BHARDWAJ 16 quotes $B(B^{+} \rightarrow X(3872) K^{+}) \cdot B(X(3872) \rightarrow \pi^{+} \pi^{-} \chi_{c1}) < 1.5 \times 10^{-6}$ at 90% CL. | | | | | |

NODE=M176R00
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$X(3872)$ REFERENCES

NODE=M176

| | | | | |
|------------|-------------|----------------|---------------------------|-------------------|
| YOUR PAPER | BHARDWAJ 16 | PR D93 052016 | V. Bhardwaj <i>et al.</i> | (BELLE Collab.) |
| | AAIJ 15AO | PR D92 011102 | R. Aaij <i>et al.</i> | (LHCb Collab.) |
| | AAIJ 13Q | PRL 110 222001 | R. Aaij <i>et al.</i> | (LHCb Collab.) JP |
| | CHOI 11 | PR D84 052004 | S.-K. Choi <i>et al.</i> | (BELLE Collab.) |
| | AUBERT 05B | PR D71 031501 | B. Aubert <i>et al.</i> | (BABAR Collab.) |
| | CHOI 03 | PRL 91 262001 | S.-K. Choi <i>et al.</i> | (BELLE Collab.) |

REFID=57272
REFID=56771
REFID=54985
REFID=53934
REFID=50498
REFID=49628