

Reference = VINOKUROVA 15; JHEP 1506 132
 Verifier code = BELLE

PLEASE READ NOW



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.

Karim Trabelsi

EMAIL: karim.trabelsi@kek.jp

July 21, 2016

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,

Simon Eidelman
 BINP, Budker Inst. of Nuclear Physics
 Prospekt Lavrent'eva 11
 RU-630090 Novosibirsk
 Russian Federation

EMAIL: simon.eidelman@cern.ch

$c\bar{c}$ MESONS

$X(3915)$
was $\chi_{c0}(3915)$

$$I^G(J^{PC}) = 0^+(0^{++})$$

The experimental analysis prefers $J^{PC} = 0^{++}$. However, a re-analysis presented in ZHOU 15C shows that if helicity-2 dominance assumption is abandoned and a sizable helicity-0 component is allowed, a $J^{PC} = 2^{++}$ assignment is possible.

NODE=MXXX025

NODE=M159

NODE=M159

$X(3915)$ BRANCHING RATIOS

 $\Gamma(\eta_c \eta)/\Gamma_{\text{total}}$
 Γ_4/Γ

VALUE

DOCUMENT ID

TECN

COMMENT

YOUR DATA

not seen

⁸ VINOKUROVA 15 BELL $B^+ \rightarrow K^+ \eta_c \eta$

YOUR NOTE

⁸ VINOKUROVA 15 reports $B(B^+ \rightarrow K^+ X(3915)^0) \times B(X \rightarrow \eta_c \eta) < 3.3 \times 10^{-5}$ at 90% CL.NODE=M159R00
NODE=M159R00

NODE=M159R00;LINKAGE=VI

 $\Gamma(\eta_c \pi^0)/\Gamma_{\text{total}}$
 Γ_5/Γ

VALUE

DOCUMENT ID

TECN

COMMENT

YOUR DATA

not seen

⁹ VINOKUROVA 15 BELL $B^+ \rightarrow K^+ \eta_c \pi^0$

YOUR NOTE

⁹ VINOKUROVA 15 reports $B(B^+ \rightarrow K^+ X(3915)^0) \times B(X \rightarrow \eta_c \pi^0) < 1.8 \times 10^{-5}$ at 90% CL.NODE=M159R04
NODE=M159R04

NODE=M159R04;LINKAGE=VI

$X(3915)$ REFERENCES

YOUR PAPER

VINOKUROVA 15 JHEP 1506 132
ZHOU 15C PRL 115 022001A. Vinokurova *et al.*
Z.-Y. Zhou, Z. Xiao, H.-Q. Zhou(BELLE Collab.)
(BEIJT, NANJ)

NODE=M159

REFID=56706
REFID=56842
NODE=M213

$X(4020)$

$$I(J^P) = 1(?^?)$$

Charged $X(4020)$ seen by ABLIKIM 13X from $e^+e^- \rightarrow \pi^+\pi^-h_c(1P)$ at c.m. energy from 3.90 to 4.42 GeV as a peak in the invariant mass distribution of the $\pi^\pm h_c(1P)$ system, and by ABLIKIM 14B from $e^+e^- \rightarrow (D^*\bar{D}^*)^\pm \pi^\mp$ events in $(D^*\bar{D}^*)^\pm$ mass. A neutral $X(4020)$ seen by ABLIKIM 14P at three c.m. energies in the same range in $e^+e^- \rightarrow \pi^0\pi^0 h_c(1P)$ as a peak in the larger of the two masses recoiling against a π^0 . ABLIKIM 15AA observes a 5.9σ signal in $(D^*\bar{D}^*)^0$ in $e^+e^- \rightarrow (D^*\bar{D}^*)^0 \pi^0$ events using collisions at two c.m. energies. Production rates and mass values support grouping neutral and charged $X(4020)$ together as manifestations of a single $I = 1$ particle.

NODE=M213

$X(4020)$ BRANCHING RATIOS

 $\Gamma(\eta_c \pi^+ \pi^-)/\Gamma_{\text{total}}$
 Γ_4/Γ

VALUE

DOCUMENT ID

TECN

COMMENT

YOUR DATA

not seen

¹ VINOKUROVA 15 BELL $B^+ \rightarrow K^+ \eta_c \pi^+ \pi^-$

YOUR NOTE

¹ VINOKUROVA 15 reports $B(B^+ \rightarrow K^+ X(4020)^0) \times B(X \rightarrow \eta_c \pi^+ \pi^-) < 1.6 \times 10^{-5}$ at 90% CL.

NODE=M213225

NODE=M213R00
NODE=M213R00

NODE=M213R00;LINKAGE=VI

$X(4020)$ REFERENCES

YOUR PAPER

ABLIKIM 15AA PRL 115 182002
VINOKUROVA 15 JHEP 1506 132
ABLIKIM 14B PRL 112 132001
ABLIKIM 14P PRL 113 212002
ABLIKIM 13X PRL 111 242001M. Ablikim *et al.*
A. Vinokurova *et al.*
M. Ablikim *et al.*
M. Ablikim *et al.*
M. Ablikim *et al.*(BES III Collab.)
(BELLE Collab.)
(BES III Collab.)
(BES III Collab.)
(BES III Collab.)

NODE=M213

REFID=56951
REFID=56706
REFID=55654
REFID=56118
REFID=55635