Reference = ABLIKIM 15U; PRL 115 112003
Verifier code = BES3

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

PLEASE READ NOW

PLEASE REPLY WITHIN ONE WEEK

Xiao-Rui Lyu

EMAIL: xiaorui@ucas.ac.cn

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

NODE=MXXX025

NODE=M210

$X(3900)$

$I^G(J^{PC}) = 1^+(1^{+-})$

NODE=M210

Charged $X(3900)$ seen as a peak in the invariant mass distribution of the $J/\psi\pi^\pm$ system by BES III (ABLIKIM 13T) in $e^+e^- \to \pi^+\pi^- J/\psi$ at c.m. energy of 4.26 GeV and by radiative return from e^+e^- collisions at $\sqrt{s}$ from 9.46 to 10.86 GeV at Belle (LIU 13B). Angular analysis of ABLIKIM 14A and ABLIKIM 15AC favor the $J^P = 1^+$ assignment. Neutral $X(3900)$ seen in the $J/\psi\pi^0$ invariant mass distribution in $e^+e^- \to \pi^0\pi^0 J/\psi$ at c.m. energies of 4.23, 4.26, and 4.36 GeV by BES III (ABLIKIM 15U) and at 4.17 GeV by XIAO 13A. Peaks in $(D\overline{D}^*)^{0,\pm}$ reported by BES III (ABLIKIM 14A, ABLIKIM 15AB) are assumed to be related.

$X(3900)$ MASS

NODE=M210M

NODE=M210M

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
3886.6±2.4 OUR AVERAGE		Error includes scale factor of 1.6. See the ideogram below.				
$3885.7^{+4.3}_{-5.7}\pm8.4$		[1] ABLIKIM	15AB	BES3	0	$e^+e^- \to \pi^0(D\overline{D}^*)^0$
3881.7±1.6±1.6	1248	[1] ABLIKIM	15AC	BES3	±	$e^+e^- \to \pi^\pm(D\overline{D}^*)^\mp$
YOUR DATA 3894.8±2.3±3.2	356	[1] ABLIKIM	15U	BES3	0	$e^+e^- \to \pi^0\pi^0 J/\psi$
3883.9±1.5±4.2	1212	[1] ABLIKIM	14A	BES3	±	$e^+e^- \to \pi^\pm(D\overline{D}^*)^\mp$
3899.0±3.6±4.9	307	[1] ABLIKIM	13T	BES3	±	$e^+e^- \to \pi^+\pi^- J/\psi$
3894.5±6.6±4.5	159	[1] LIU	13B	BELL	±	$e^+e^- \to \gamma\pi^+\pi^- J/\psi$
3886 ±4 ±2	81	[1,2] XIAO	13A		±	4.17 $e^+e^- \to \pi^+\pi^- J/\psi$
3904 ±9 ±5	25	[1,2] XIAO	13A		0	4.17 $e^+e^- \to \pi^0\pi^0 J/\psi$

OCCUR=2

[1] Neglecting interference between the $X(3900)$ and non-resonant continuum.

NODE=M210M;LINKAGE=A

[2] For $M^2(\pi^+\pi^-) < 0.65$ GeV^2. Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

NODE=M210M;LINKAGE=B

$X(3900)$ WIDTH

NODE=M210W

NODE=M210W

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
28.1± 2.6 OUR AVERAGE						
$35\ ^{+11}_{-12}\ \pm15$		[1] ABLIKIM	15AB	BES3	0	$e^+e^- \to \pi^0(D\overline{D}^*)^0$
26.6± 2.0± 2.1	1248	[1] ABLIKIM	15AC	BES3	±	$e^+e^- \to \pi^\pm(D\overline{D}^*)^\mp$
YOUR DATA 29.6± 8.2± 8.2	356	[1] ABLIKIM	15U	BES3	0	$e^+e^- \to \pi^0\pi^0 J/\psi$
24.8± 3.3±11.0	1212	[1] ABLIKIM	14A	BES3	±	$e^+e^- \to \pi^\pm(D\overline{D}^*)^\mp$
46 ±10 ±20	307	[1] ABLIKIM	13T	BES3	±	$e^+e^- \to \pi^+\pi^- J/\psi$
63 ±24 ±26	159	[1] LIU	13B	BELL	±	$e^+e^- \to \gamma\pi^+\pi^- J/\psi$
37 ± 4 ± 8	81	[1,2] XIAO	13A		±	4.17 $e^+e^- \to \pi^+\pi^- J/\psi$

[1] Neglecting interference between the $X(3900)$ and non-resonant continuum.

NODE=M210W;LINKAGE=A

[2] For $M^2(\pi^+\pi^-) < 0.65$ GeV^2. Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

NODE=M210W;LINKAGE=B

$X(3900)$ BRANCHING RATIOS

NODE=M210225

$\Gamma(J/\psi\pi)/\Gamma_{\text{total}}$ **Γ_1/Γ**

NODE=M210R01

NODE=M210R01

VALUE	CL%	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
YOUR DATA seen		356	ABLIKIM	15U	BES3	0	$e^+e^- \to \pi^0\pi^0 J/\psi$
seen		307	ABLIKIM	13T	BES3	±	$e^+e^- \to \pi^+\pi^- J/\psi$
seen		25	[1] XIAO	13A		0	4.17 $e^+e^- \to \pi^0\pi^0 J/\psi$

• • • We do not use the following data for averages, fits, limits, etc. • • •

not seen	90	[2] ADOLPH	15D	COMP	±	$\gamma N \to J/\psi\pi^\pm N$

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.
[2] ADOLPH 15D measure $B(X(3900)^{\pm} \to J/\psi\pi^{\pm})\ \sigma(\gamma N \to X(3900)^{\pm} N)/\sigma(\gamma N \to J/\psi N) < 3.7 \times 10^{-3}$ at 90% CL.

NODE=M210R01;LINKAGE=XI
NODE=M210R01;LINKAGE=A

X(3900) REFERENCES

NODE=M210

	ABLIKIM	15AB	PRL 115 222002	M. Ablikim *et al.*	(BES III Collab.)	REFID=56954
	ABLIKIM	15AC	PR D92 092006	M. Ablikim *et al.*	(BES III Collab.) JP	REFID=56967
YOUR PAPER	ABLIKIM	15U	PRL 115 112003	M. Ablikim *et al.*	(BES III Collab.)	REFID=56786
	ADOLPH	15D	PL B742 330	C. Adolph *et al.*	(COMPASS Collab.)	REFID=56791
	ABLIKIM	14A	PRL 112 022001	M. Ablikim *et al.*	(BES III Collab.) JP	REFID=55648
	ABLIKIM	13T	PRL 110 252001	M. Ablikim *et al.*	(BES III Collab.)	REFID=55409
	LIU	13B	PRL 110 252002	Z.Q. Liu *et al.*	(BELLE Collab.)	REFID=55410
	XIAO	13A	PL B727 366	T. Xiao *et al.*	(NWES)	REFID=55593