Reference = ABLIKIM 14P; PRL 113 212002
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
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Prospekt Lavrent'eva 11
RU-630090 Novosibirsk
Russian Federation

EMAIL: simon.eidelman@cern.ch

$c\bar{c}$ MESONS

NODE=MXXX025

NODE=M213

$X(4020)$

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

NODE=M213

Charged X(4020) seen by ABLIKIM 13X from $e^+e^- \to \pi^+\pi^- h_c(1P)$ 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 $e^+e^- \to (D^*\overline{D}^*)^\pm\pi^\mp$ events in $(D^*\overline{D}^*)^\pm$ mass. A neutral X(4020) seen by ABLIKIM 14P at three c.m. energies in the same range in $e^+e^- \to \pi^0\pi^0 h_c(1P)$ as a peak in the larger of the two masses recoiling against a π^0. ABLIKIM 15AA observes a 5.9 σ signal in $(D^*\overline{D}^*)^0$ in $e^+e^- \to (D^*\overline{D}^*)^0\,\pi^0$ 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.

$X(4020)$ MASS

NODE=M213M

NODE=M213M

	VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
	4024.1±1.9 OUR AVERAGE						
	$4025.5^{+2.0}_{-4.7}\pm3.1$	116	[1] ABLIKIM	15AA	BES3	0	$e^+e^- \to (D^*\overline{D}^*)^0\,\pi^0$
	4026.3±2.6±3.7	401	[1] ABLIKIM	14B	BES3	±	$e^+e^- \to (D^*\overline{D}^*)^\pm\,\pi^\mp$
YOUR DATA	4023.9±2.2±3.8	61	[1,2] ABLIKIM	14P	BES3	0	$e^+e^- \to \pi^0\pi^0 h_c$
	4022.9±0.8±2.7	253	[1] ABLIKIM	13X	BES3	±	$e^+e^- \to \pi^+\pi^- h_c$

[1] Neglecting interference between the $X(4020)$ and non-resonant continuum. NODE=M213M;LINKAGE=AB

YOUR NOTE [2] Assuming $J^P = 1^+$ and width of 7.9 ± 2.6 MeV. NODE=M213M;LINKAGE=B

$X(4020)$ BRANCHING RATIOS

NODE=M213225

$\Gamma(h_c(1P)\pi)/\Gamma_{\text{total}}$ **Γ_1/Γ**

NODE=M213R01
NODE=M213R01

	VALUE	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
YOUR DATA	**seen**	61	ABLIKIM	14P	BES3	0	$e^+e^- \to \pi^0\pi^0 h_c$
	seen	253	ABLIKIM	13X	BES3	±	$e^+e^- \to \pi^+\pi^- h_c$

$X(4020)$ REFERENCES

NODE=M213

ABLIKIM	15AA	PRL 115 182002	M. Ablikim *et al.*	(BES III Collab.)	REFID=56951
ABLIKIM	14B	PRL 112 132001	M. Ablikim *et al.*	(BES III Collab.)	REFID=55654
YOUR PAPER ABLIKIM	14P	PRL 113 212002	M. Ablikim *et al.*	(BES III Collab.)	REFID=56118
ABLIKIM	13X	PRL 111 242001	M. Ablikim *et al.*	(BES III Collab.)	REFID=55635