

Reference = ABLIKIM 15H; PR D91 052017
Verifier code = BES3

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.

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
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Russian Federation

EMAIL: simon.eidelman@cern.ch

LIGHT UNFLAVORED MESONS

($S = C = B = 0$)

For $I = 1$ (π, b, ρ, a): $u\bar{d}, (u\bar{u}-d\bar{d})/\sqrt{2}, d\bar{u}$;
for $I = 0$ ($\eta, \eta', h, h', \omega, \phi, f, f'$): $c_1(u\bar{u} + d\bar{d}) + c_2(s\bar{s})$

$\phi(2170)$

$$J^G(J^{PC}) = 0^-(1^{--})$$

Observed by AUBERT,BE 06D in the initial-state radiation process
 $e^+e^- \rightarrow \phi f_0(980)\gamma$.

NODE=MXXX005

NODE=MXXX005

NODE=M103

NODE=M103

$\phi(2170)$ MASS

NODE=M103M

NODE=M103M

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
2189±11 OUR AVERAGE		Error includes scale factor of 1.8. See the ideogram below.		
YOUR DATA 2200±6±5	471	ABLIKIM 15H	BES3	$J/\psi \rightarrow \eta\phi\pi^+\pi^-$
2186±10±6	52	ABLIKIM 08F	BES	$J/\psi \rightarrow \eta\phi f_0(980)$
2125±22±10	483	AUBERT 08S	BABR	10.6 $e^+e^- \rightarrow \phi\eta\gamma$
2175±10±15	201	¹ AUBERT,BE 06D	BABR	10.6 $e^+e^- \rightarrow K^+K^-\pi\pi\gamma$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
2079±13 ⁺⁷⁹ ₋₂₈	4.8k	² SHEN 09	BELL	10.6 $e^+e^- \rightarrow K^+K^-\pi^+\pi^-\gamma$
2192±14	116	³ AUBERT 07AK	BABR	10.6 $e^+e^- \rightarrow K^+K^-\pi^+\pi^-\gamma$
2169±20	149	³ AUBERT 07AK	BABR	10.6 $e^+e^- \rightarrow K^+K^-\pi^0\pi^0\gamma$
¹ From the $\phi f_0(980)$ component.				
² From a fit with two incoherent Breit-Wigners.				
³ From the $K^+K^- f_0(980)$ component.				

OCCUR=2

NODE=M103M;LINKAGE=AB
NODE=M103M;LINKAGE=SH
NODE=M103M;LINKAGE=AU

$\phi(2170)$ WIDTH

NODE=M103W

NODE=M103W

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
79±14 OUR AVERAGE				
YOUR DATA 104±15±15	471	ABLIKIM 15H	BES3	$J/\psi \rightarrow \eta\phi\pi^+\pi^-$
65±23±17	52	ABLIKIM 08F	BES	$J/\psi \rightarrow \eta\phi f_0(980)$
61±50±13	483	AUBERT 08S	BABR	10.6 $e^+e^- \rightarrow \phi\eta\gamma$
58±16±20	201	⁴ AUBERT,BE 06D	BABR	10.6 $e^+e^- \rightarrow K^+K^-\pi\pi\gamma$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
192±23 ⁺²⁵ ₋₆₁	4.8k	⁵ SHEN 09	BELL	10.6 $e^+e^- \rightarrow K^+K^-\pi^+\pi^-\gamma$
71±21	116	⁶ AUBERT 07AK	BABR	10.6 $e^+e^- \rightarrow K^+K^-\pi^+\pi^-\gamma$
102±27	149	⁶ AUBERT 07AK	BABR	10.6 $e^+e^- \rightarrow K^+K^-\pi^0\pi^0\gamma$
⁴ From the $\phi f_0(980)$ component.				
⁵ From a fit with two incoherent Breit-Wigners.				
⁶ From the $K^+K^- f_0(980)$ component.				

OCCUR=2

NODE=M103W;LINKAGE=AB
NODE=M103W;LINKAGE=SH
NODE=M103W;LINKAGE=AU

$\phi(2170)$ REFERENCES

NODE=M103

YOUR PAPER	ABLIKIM 15H	PR D91 052017	M. Ablikim <i>et al.</i>	(BES III Collab.)
	SHEN 09	PR D80 031101	C.P. Shen <i>et al.</i>	(BELLE Collab.)
	ABLIKIM 08F	PRL 100 102003	M. Ablikim <i>et al.</i>	(BES Collab.)
	AUBERT 08S	PR D77 092002	B. Aubert <i>et al.</i>	(BABAR Collab.)
	AUBERT 07AK	PR D76 012008	B. Aubert <i>et al.</i>	(BABAR Collab.)
	AUBERT,BE 06D	PR D74 091103	B. Aubert <i>et al.</i>	(BABAR Collab.)

REFID=56773
REFID=53000
REFID=52154
REFID=52242
REFID=51908
REFID=51511

$c\bar{c}$ MESONS

NODE=MXXX025

$J/\psi(1S)$

$$J^G(J^{PC}) = 0^-(1^{--})$$

NODE=M070

$J/\psi(1S)$ BRANCHING RATIOS**HADRONIC DECAYS** **$\Gamma(\phi f_1(1285))/\Gamma_{\text{total}}$** **$\Gamma_{65}/\Gamma$** VALUE (units 10^{-4}) EVTsDOCUMENT IDTECNCOMMENT **2.6 ± 0.5 OUR AVERAGE**

YOUR DATA

 $3.4 \pm 1.8 \pm 1.5$ 1.1k¹

ABLIKIM

15H

BES3

 $e^+e^- \rightarrow J/\psi \rightarrow \phi \eta \pi^+ \pi^-$ $3.2 \pm 0.6 \pm 0.4$

JOUSSET

90

DM2

 $J/\psi \rightarrow \phi 2(\pi^+ \pi^-)$ $2.1 \pm 0.5 \pm 0.4$

25

²

JOUSSET

90

DM2

 $J/\psi \rightarrow \phi \eta \pi^+ \pi^-$

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

 $0.6 \pm 0.2 \pm 0.1$

16

BECKER

87

MRK3

 $J/\psi \rightarrow \phi K \bar{K} \pi$

YOUR NOTE

¹ ABLIKIM 15H reports $[\Gamma(J/\psi(1S) \rightarrow \phi f_1(1285))/\Gamma_{\text{total}}] \times [B(f_1(1285) \rightarrow \eta \pi^+ \pi^-)] = (1.20 \pm 0.6 \pm 0.14) \times 10^{-4}$ which we divide by our best value $B(f_1(1285) \rightarrow \eta \pi^+ \pi^-) = (35 \pm 15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

² We attribute to the $f_1(1285)$ the signal observed in the $\pi^+ \pi^- \eta$ invariant mass distribution at 1297 MeV.

NODE=M070230

NODE=M070305

NODE=M070S6
NODE=M070S6

OCCUR=2

NODE=M070S6;LINKAGE=A

NODE=M070S6;LINKAGE=Q

 $\Gamma(\phi \eta(1405) \rightarrow \phi \eta \pi^+ \pi^-)/\Gamma_{\text{total}}$ **Γ_{78}/Γ** VALUE (units 10^{-5}) CL% EVTsDOCUMENT IDTECNCOMMENT **$2.01 \pm 0.58 \pm 0.82$**

172

¹

ABLIKIM

15H

BES3

 $e^+e^- \rightarrow J/\psi \rightarrow \phi \eta \pi^+ \pi^-$

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

< 17

90

²

FALVARD

88

DM2

 $J/\psi \rightarrow \text{hadrons}$

YOUR NOTE

¹ With 3.6 σ significance.² Includes unknown branching fraction $\eta(1405) \rightarrow \eta \pi \pi$.NODE=M070S23
NODE=M070S23

NODE=M070S23;LINKAGE=B

NODE=M070S23;LINKAGE=A

 $\Gamma(\phi X(1835) \rightarrow \phi \eta \pi^+ \pi^-)/\Gamma_{\text{total}}$ **Γ_{81}/Γ** VALUE CL%DOCUMENT IDTECNCOMMENT **$< 2.8 \times 10^{-4}$**

90

ABLIKIM

15H

BES3

 $e^+e^- \rightarrow J/\psi \rightarrow \phi \eta \pi^+ \pi^-$

YOUR DATA

 $\Gamma(\phi X(1870) \rightarrow \phi \eta \pi^+ \pi^-)/\Gamma_{\text{total}}$ **Γ_{82}/Γ** VALUE CL%DOCUMENT IDTECNCOMMENT **$< 6.13 \times 10^{-5}$**

90

ABLIKIM

15H

BES3

 $e^+e^- \rightarrow J/\psi \rightarrow \phi \eta \pi^+ \pi^-$

YOUR DATA

NODE=M070B10
NODE=M070B10NODE=M070B11
NODE=M070B11 **$\Gamma(\eta \phi(2170) \rightarrow \eta \phi f_0(980) \rightarrow \eta \phi \pi^+ \pi^-)/\Gamma_{\text{total}}$** **$\Gamma_{83}/\Gamma$** VALUE (units 10^{-4}) EVTsDOCUMENT IDTECNCOMMENT **$1.20 \pm 0.14 \pm 0.37$**

471

ABLIKIM

15H

BES3

 $e^+e^- \rightarrow J/\psi \rightarrow \phi \eta \pi^+ \pi^-$

YOUR DATA

NODE=M070B12
NODE=M070B12 **$J/\psi(1S)$ REFERENCES**

NODE=M070

YOUR PAPER

ABLIKIM

15H

PR D91 052017

M. Ablikim *et al.*

(BES III Collab.)

REFID=56773

JOUSSET

90

PR D41 1389

J. Jousset *et al.*

(DM2 Collab.)

REFID=41349

FALVARD

88

PR D38 2706

A. Falvard *et al.*

(CLER, FRAS, LALO+)

REFID=40576

BECKER

87

PRL 59 186

J.J. Becker *et al.*

(Mark III Collab.)

REFID=40015