

Reference = AAIJ 14Y; PRL 112 091802
Verifier code = LHCB

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.

Vincenzo Vagnoni

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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,

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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 $I = 0$ ($\eta, \eta', h, h', \omega, \phi, f, f'$): $c_1(u\bar{u} + d\bar{d}) + c_2(s\bar{s})$

$f_1(1285)$

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

NODE=MXXX005

NODE=MXXX005

NODE=M008

$f_1(1285)$ MASS

NODE=M008M

NODE=M008M

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
1282.0 $\pm$ 0.5 OUR AVERAGE		Error includes scale factor of 1.8. See the ideogram below.		
1287.4 $\pm$ 3.0	87	ABLIKIM	15P BES3	$J/\psi \rightarrow K^+ K^- 3\pi$
1281.16 $\pm$ 0.39 $\pm$ 0.45		¹ LEES	12X BABR	$\tau^- \rightarrow \pi^- f_1(1285) \nu_\tau$
1285.1 $\pm$ 1.0 $\pm$ 1.6 $\pm$ 0.3		² ABLIKIM	11J BES3	$J/\psi \rightarrow \omega(\eta\pi^+\pi^-)$
1281 $\pm$ 2 $\pm$ 1		AUBERT	07AU BABR	10.6 $e^+e^- \rightarrow f_1(1285)\pi^+\pi^-\gamma$
1276.1 $\pm$ 8.1 $\pm$ 8.0	203	BAI	04J BES2	$J/\psi \rightarrow \gamma\gamma\pi^+\pi^-$
1274 $\pm$ 6	237	ABDALLAH	03H DLPH	91.2 $e^+e^- \rightarrow K_S^0 K^\pm \pi^\mp + X$
1280 $\pm$ 4		ACCIARRI	01G L3	
1288 $\pm$ 4 $\pm$ 5	20k	ADAMS	01B B852	18 GeV $\pi^- p \rightarrow K^+ K^- \pi^0 n$
1284 $\pm$ 6	1400	ALDE	97B GAM4	100 $\pi^- p \rightarrow \eta\pi^0\pi^0 n$
1281 $\pm$ 1		BARBERIS	97B OMEG	450 $pp \rightarrow pp2(\pi^+\pi^-)$
1281 $\pm$ 1		BARBERIS	97C OMEG	450 $pp \rightarrow ppK_S^0 K^\pm \pi^\mp$
1280 $\pm$ 2		³ ANTINORI	95 OMEG	300,450 $pp \rightarrow pp2(\pi^+\pi^-)$
1282.2 $\pm$ 1.5		LEE	94 MPS2	18 $\pi^- p \rightarrow K^+ \bar{K}^0 2\pi^- p$
1279 $\pm$ 5		FUKUI	91C SPEC	8.95 $\pi^- p \rightarrow \eta\pi^+\pi^- n$
1278 $\pm$ 2	140	ARMSTRONG	89 OMEG	300 $pp \rightarrow K \bar{K} \pi pp$
1278 $\pm$ 2		ARMSTRONG	89G OMEG	85 $\pi^+ p \rightarrow 4\pi\pi p, pp \rightarrow 4\pi pp$
1280.1 $\pm$ 2.1	60	RATH	89 MPS	21.4 $\pi^- p \rightarrow K_S^0 K_S^0 \pi^0 n$
1285 $\pm$ 1	4750	⁴ BIRMAN	88 MPS	8 $\pi^- p \rightarrow K^+ \bar{K}^0 \pi^- n$
1280 $\pm$ 1	504	BITYUKOV	88 SPEC	32.5 $\pi^- p \rightarrow K^+ K^- \pi^0 n$
1280 $\pm$ 4		ANDO	86 SPEC	8 $\pi^- p \rightarrow \eta\pi^+\pi^- n$
1277 $\pm$ 2	420	REEVES	86 SPEC	6.6 $p\bar{p} \rightarrow K K \pi X$
1285 $\pm$ 2		CHUNG	85 SPEC	8 $\pi^- p \rightarrow N K \bar{K} \pi$
1279 $\pm$ 2	604	ARMSTRONG	84 OMEG	85 $\pi^+ p \rightarrow K \bar{K} \pi \pi p, pp \rightarrow K \bar{K} \pi pp$
1286 $\pm$ 1		CHAUVAT	84 SPEC	ISR 31.5 pp
1278 $\pm$ 4		EVANGELIS...	81 OMEG	12 $\pi^- p \rightarrow \eta\pi^+\pi^-\pi^- p$
1283 $\pm$ 3	103	DIONISI	80 HBC	4 $\pi^- p \rightarrow K \bar{K} \pi n$
1282 $\pm$ 2	320	NACASCH	78 HBC	0.7,0.76 $\bar{p}p \rightarrow K \bar{K} 3\pi$
1279 $\pm$ 5	210	GRASSLER	77 HBC	16 $\pi^\mp p$
1286 $\pm$ 3	180	DUBOC	72 HBC	1.2 $\bar{p}p \rightarrow 2K4\pi$
1283 $\pm$ 5		DAHL	67 HBC	1.6-4.2 $\pi^- p$

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

YOUR DATA	1284.2 $\pm$ 2.2	⁵ AAIJ	14Y LHCb	$\bar{B}_{(s)}^0 \rightarrow J/\psi 2(\pi^+\pi^-)$
	1281.9 $\pm$ 0.5	⁵ SOSA	99 SPEC	$pp \rightarrow p_{\text{slow}} (K_S^0 K^+ \pi^-) p_{\text{fast}}$
	1282.8 $\pm$ 0.6	⁵ SOSA	99 SPEC	$pp \rightarrow p_{\text{slow}} (K_S^0 K^- \pi^+) p_{\text{fast}}$
	1270 $\pm$ 10	AMELIN	95 VES	37 $\pi^- N \rightarrow \pi^- \pi^+ \pi^- \gamma N$
	1280 $\pm$ 2	ABATZIS	94 OMEG	450 $pp \rightarrow pp2(\pi^+\pi^-)$
	1282 $\pm$ 4	ARMSTRONG	93C E760	$\bar{p}p \rightarrow \pi^0 \eta \eta \rightarrow 6\gamma$
	1270 $\pm$ 6 $\pm$ 10	ARMSTRONG	92C OMEG	300 $pp \rightarrow pp\pi^+\pi^-\gamma$

OCCUR=2

1281	± 1		ARMSTRONG	89E	OMEG	300 $pp \rightarrow p p 2(\pi^+ \pi^-)$
1279	± 6	± 10	BECKER	87	MRK3	$e^+ e^- \rightarrow \phi K \bar{K} \pi$
1286	± 9		GIDAL	87	MRK2	$e^+ e^- \rightarrow e^+ e^- \eta \pi^+ \pi^-$
1287	± 5	353	BITYUKOV	84B	SPEC	$32 \pi^- p \rightarrow K^+ K^- \pi^0 n$
~ 1279			TORNQVIST	82B	RVUE	
1275	± 6	31	BROMBERG	80	SPEC	$100 \pi^- p \rightarrow K \bar{K} \pi X$
1288	± 9	200	GURTU	79	HBC	$4.2 K^- p \rightarrow n \eta 2\pi$
~ 1275.0		46	STANTON	79	CNTR	$8.5 \pi^- p \rightarrow n 2\gamma 2\pi$
1271	± 10	34	CORDEN	78	OMEG	$12-15 \pi^- p \rightarrow K^+ K^- \pi n$
1295	± 12	85	CORDEN	78	OMEG	$12-15 \pi^- p \rightarrow n 5\pi$
1292	± 10	150	DEFOIX	72	HBC	$0.7 \bar{p} p \rightarrow 7\pi$
1280	± 3	500	THUN	72	MMS	$13.4 \pi^- p$
1303	± 8		BARDADIN...	71	HBC	$8 \pi^+ p \rightarrow p 6\pi$
1283	± 6		BOESEBECK	71	HBC	$16.0 \pi p \rightarrow p 5\pi$
1270	± 10		CAMPBELL	69	DBC	$2.7 \pi^+ d$
1285	± 7		LORSTAD	69	HBC	$0.7 \bar{p} p, 4,5\text{-body}$
1290	± 7		D'ANDLAU	68	HBC	$1.2 \bar{p} p, 5-6\text{ body}$

OCCUR=2

¹ Using the $2\pi^+ 2\pi^-$ and $\pi^+ \pi^- \eta$ modes of $f_1(1285)$ decay.

² The selected process is $J/\psi \rightarrow \omega a_0(980)\pi$.

³ Supersedes ABATZIS 94, ARMSTRONG 89E.

⁴ From partial wave analysis of $K^+ \bar{K}^0 \pi^-$ system.

⁵ No systematic error given.

⁶ From a unitarized quark-model calculation.

⁷ From phase shift analysis of $\eta \pi^+ \pi^-$ system.

⁸ Seen in the missing mass spectrum.

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 NODE=M008M;LINKAGE=N1
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 NODE=M008M;LINKAGE=P
 NODE=M008M;LINKAGE=S

$f_1(1285)$ WIDTH

NODE=M008W

Only experiments giving width error less than 20 MeV are kept for averaging.

NODE=M008W

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
24.1 $\pm$ 1.0 OUR AVERAGE		Error includes scale factor of 1.3. See the ideogram below.		
18.3 $\pm$ 6.3	87	ABLIKIM	15P BES3	$J/\psi \rightarrow K^+ K^- 3\pi$
22.0 $\pm$ 3.1 $^{+2.0}_{-1.5}$		¹ ABLIKIM	11J BES3	$J/\psi \rightarrow \omega(\eta \pi^+ \pi^-)$
35 $\pm$ 6 $\pm$ 4		AUBERT	07AU BABR	$10.6 e^+ e^- \rightarrow f_1(1285) \pi^+ \pi^- \gamma$
40.0 $\pm$ 8.6 $\pm$ 9.3	203	BAI	04J BES2	$J/\psi \rightarrow \gamma \gamma \pi^+ \pi^-$
29 $\pm$ 12	237	ABDALLAH	03H DLPH	$91.2 e^+ e^- \rightarrow K_S^0 K^\pm \pi^\mp + X$
45 $\pm$ 9 $\pm$ 7	20k	ADAMS	01B B852	$18 \text{ GeV } \pi^- p \rightarrow K^+ K^- \pi^0 n$
55 $\pm$ 18	1400	ALDE	97B GAM4	$100 \pi^- p \rightarrow \eta \pi^0 \pi^0 n$
24 $\pm$ 3		BARBERIS	97B OMEG	$450 pp \rightarrow p p 2(\pi^+ \pi^-)$
20 $\pm$ 2		BARBERIS	97C OMEG	$450 pp \rightarrow p p K_S^0 K^\pm \pi^\mp$
36 $\pm$ 5		² ANTINORI	95 OMEG	$300,450 pp \rightarrow p p 2(\pi^+ \pi^-)$
29.0 $\pm$ 4.1		LEE	94 MPS2	$18 \pi^- p \rightarrow K^+ \bar{K}^0 2\pi^- p$
25 $\pm$ 4	140	ARMSTRONG	89 OMEG	$300 pp \rightarrow K \bar{K} \pi p p$
22 $\pm$ 2	4750	³ BIRMAN	88 MPS	$8 \pi^- p \rightarrow K^+ \bar{K}^0 \pi^- n$
25 $\pm$ 4	504	BITYUKOV	88 SPEC	$32.5 \pi^- p \rightarrow K^+ K^- \pi^0 n$
19 $\pm$ 5		ANDO	86 SPEC	$8 \pi^- p \rightarrow \eta \pi^+ \pi^- n$
32 $\pm$ 8	420	REEVES	86 SPEC	$6.6 p \bar{p} \rightarrow K K \pi X$
22 $\pm$ 2		CHUNG	85 SPEC	$8 \pi^- p \rightarrow N K \bar{K} \pi$
32 $\pm$ 3	604	ARMSTRONG	84 OMEG	$85 \pi^+ p \rightarrow K \bar{K} \pi \pi p,$ $pp \rightarrow K \bar{K} \pi p p$
24 $\pm$ 3		CHAUVAT	84 SPEC	ISR 31.5 pp
29 $\pm$ 10	103	DIONISI	80 HBC	$4 \pi^- p \rightarrow K \bar{K} \pi n$
28.3 $\pm$ 6.7	320	NACASCH	78 HBC	$0.7, 0.76 \bar{p} p \rightarrow K \bar{K} 3\pi$

NODE=M008W

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

YOUR DATA	32.4 $\pm$ 5.8	⁴ AAIJ	14Y LHCB	$\bar{B}_{(s)}^0 \rightarrow J/\psi 2(\pi^+ \pi^-)$
	18.2 $\pm$ 1.2	⁴ SOSA	99 SPEC	$pp \rightarrow p_{\text{slow}} (K_S^0 K^+ \pi^-)$ p_{fast}

19.4 ± 1.5		⁴ SOSA	99	SPEC	$p p \rightarrow p_{\text{slow}} (K_S^0 K^- \pi^+)$
40 ± 5		ABATZIS	94	OMEG	$450 p p \rightarrow p p 2(\pi^+ \pi^-)$
31 ± 5		ARMSTRONG	89E	OMEG	$300 p p \rightarrow p p 2(\pi^+ \pi^-)$
41 ± 12		ARMSTRONG	89G	OMEG	$85 \pi^+ p \rightarrow 4\pi \pi p, p p \rightarrow 4\pi p p$
17.9 ± 10.9	60	RATH	89	MPS	$21.4 \pi^- p \rightarrow K_S^0 K_S^0 \pi^0 n$
14 $\begin{smallmatrix} +20 \\ -14 \end{smallmatrix}$ ± 10	16	BECKER	87	MRK3	$e^+ e^- \rightarrow \phi K \bar{K} \pi$
26 ± 12		EVANGELIS...	81	OMEG	$12 \pi^- p \rightarrow \eta \pi^+ \pi^- \pi^- p$
25 ± 15	200	GURTU	79	HBC	$4.2 K^- p \rightarrow n \eta 2\pi$
~ 10		⁵ STANTON	79	CNTR	$8.5 \pi^- p \rightarrow n 2\gamma 2\pi$
24 ± 18	210	GRASSLER	77	HBC	$16 \pi^\mp p$
28 ± 5	150	⁶ DEFOIX	72	HBC	$0.7 \bar{p} p \rightarrow 7\pi$
46 ± 9	180	⁶ DUBOC	72	HBC	$1.2 \bar{p} p \rightarrow 2K 4\pi$
37 ± 5	500	⁷ THUN	72	MMS	$13.4 \pi^- p$
10 ± 10		BOESEBECK	71	HBC	$16.0 \pi p \rightarrow p 5\pi$
30 ± 15		CAMPBELL	69	DBC	$2.7 \pi^+ d$
60 ± 15		⁶ LORSTAD	69	HBC	$0.7 \bar{p} p, 4,5\text{-body}$
35 ± 10		⁶ DAHL	67	HBC	$1.6\text{--}4.2 \pi^- p$

¹ The selected process is $J/\psi \rightarrow \omega a_0(980)\pi$.

² Supersedes ABATZIS 94, ARMSTRONG 89E.

³ From partial wave analysis of $K^+ \bar{K}^0 \pi^-$ system.

⁴ No systematic error given.

⁵ From phase shift analysis of $\eta \pi^+ \pi^-$ system.

⁶ Resolution is not unfolded.

⁷ Seen in the missing mass spectrum.

OCCUR=2

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 NODE=M008W;LINKAGE=P
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 NODE=M008W;LINKAGE=S

f₁(1285) REFERENCES

NODE=M008

YOUR PAPER

ABLIKIM	15P	PR D92 012007	M. Ablikim <i>et al.</i>	(BES III Collab.)
AAJ	14Y	PRL 112 091802	R. Aaij <i>et al.</i>	(LHCb Collab.)
LEES	12X	PR D86 092010	J.P. Lees <i>et al.</i>	(BABAR Collab.)
ABLIKIM	11J	PRL 107 182001	M. Ablikim <i>et al.</i>	(BES III Collab.)
AUBERT	07AU	PR D76 092005	B. Aubert <i>et al.</i>	(BABAR Collab.)
BAI	04J	PL B594 47	J.Z. Bai <i>et al.</i>	(BES Collab.)
ABDALLAH	03H	PL B569 129	J. Abdallah <i>et al.</i>	(DELPHI Collab.)
ACCARI	01G	PL B501 1	M. Acciarri <i>et al.</i>	(L3 Collab.)
ADAMS	01B	PL B516 264	G.S. Adams <i>et al.</i>	(BNL E852 Collab.)
SOSA	99	PRL 83 913	M. Sosa <i>et al.</i>	
ALDE	97B	PAN 60 386	D. Alde <i>et al.</i>	(GAMS Collab.)
		Translated from YAF 60 458.		
BARBERIS	97B	PL B413 217	D. Barberis <i>et al.</i>	(WA 102 Collab.)
BARBERIS	97C	PL B413 225	D. Barberis <i>et al.</i>	(WA 102 Collab.)
AMELIN	95	ZPHY C66 71	D.V. Amelin <i>et al.</i>	(VES Collab.)
ANTINORI	95	PL B353 589	F. Antinori <i>et al.</i>	(ATHU, BARI, BIRM+)
ABATZIS	94	PL B324 509	S. Abatzis <i>et al.</i>	(ATHU, BARI, BIRM+)
LEE	94	PL B323 227	J.H. Lee <i>et al.</i>	(BNL, IND, KYUN, MASD+)
ARMSTRONG	93C	PL B307 394	T.A. Armstrong <i>et al.</i>	(FNAL, FERR, GENO+)
ARMSTRONG	92C	ZPHY C54 371	T.A. Armstrong <i>et al.</i>	(ATHU, BARI, BIRM+)
FUKUI	91C	PL B267 293	S. Fukui <i>et al.</i>	(SUGI, NAGO, KEK, KYOT+)
ARMSTRONG	89	PL B221 216	T.A. Armstrong <i>et al.</i>	(CERN, CDEF, BIRM+)
ARMSTRONG	89E	PL B228 536	T.A. Armstrong, M. Benayoun	(ATHU, BARI, BIRM+)
ARMSTRONG	89G	ZPHY C43 55	T.A. Armstrong <i>et al.</i>	(CERN, BIRM, BARI+)
RATH	89	PR D40 693	M.G. Rath <i>et al.</i>	(NDAM, BRAN, BNL, CUNY+)
BIRMAN	88	PRL 61 1557	A. Birman <i>et al.</i>	(BNL, FSU, IND, MASD) JP
BITYUKOV	88	PL B203 327	S.I. Bityukov <i>et al.</i>	(SERP)
BECKER	87	PRL 59 186	J.J. Becker <i>et al.</i>	(Mark III Collab.)
GIDAL	87	PRL 59 2012	G. Gidal <i>et al.</i>	(LBL, SLAC, HARV)
ANDO	86	PRL 57 1296	A. Ando <i>et al.</i>	(KEK, KYOT, NIRS, SAGA+) IJP
REEVES	86	PR D34 1960	D.F. Reeves <i>et al.</i>	(FLOR, BNL, IND+) JP
CHUNG	85	PRL 55 779	S.U. Chung <i>et al.</i>	(BNL, FLOR, IND+) JP
ARMSTRONG	84B	PL 146B 273	T.A. Armstrong <i>et al.</i>	(ATHU, BARI, BIRM+) JP
BITYUKOV	84B	PL 144B 133	S.I. Bityukov <i>et al.</i>	(SERP)
CHAUVAT	84	PL 148B 382	P. Chauvat <i>et al.</i>	(CERN, CLER, UCLA+)
TORNQVIST	82B	NP B203 268	N.A. Tornqvist	(HELS)
EVANGELIS...	81	NP B178 197	C. Evangelista <i>et al.</i>	(BARI, BONN, CERN+)
BROMBERG	80	PR D22 1513	C.M. Bromberg <i>et al.</i>	(CIT, FNAL, ILLC+)
DIONISI	80	NP B169 1	C. Dionisi <i>et al.</i>	(CERN, MADR, CDEF+)
GURTU	79	NP B151 181	A. Gurtu <i>et al.</i>	(CERN, ZEEM, NIJM, OXF)
STANTON	79	PRL 42 346	N.R. Stanton <i>et al.</i>	(OSU, CARL, MCGI+) JP
CORDEN	78	NP B144 253	M.J. Corden <i>et al.</i>	(BIRM, RHEL, TELA+) JP
NACASCH	78	NP B135 203	R. Nacasch <i>et al.</i>	(PARIS, MADR, CERN)
GRASSLER	77	NP B121 189	H. Grassler <i>et al.</i>	(AACH3, BERL, BONN+)
DEFOIX	72	NP B44 125	C. Defoix <i>et al.</i>	(CDEF, CERN)
DUBOC	72	NP B46 429	J. Duboc <i>et al.</i>	(PARIS, LIVP)
THUN	72	PRL 28 1733	R. Thun <i>et al.</i>	(STON, NEAS)
BARDADIN...	71	PR D4 2711	M. Bardadin-Otwinowska <i>et al.</i>	(WARS)
BOESEBECK	71	PL 34B 659	K. Boesebeck	(AACH, BERL, BONN, CERN, CRAC+)
CAMPBELL	69	PRL 22 1204	J.H. Campbell <i>et al.</i>	(PURD)
LORSTAD	69	NP B14 63	B. Lorstad <i>et al.</i>	(CDEF, CERN) JP
D'ANDLAU	68	NP B5 693	C. d'Andlau <i>et al.</i>	(CDEF, CERN, IRAD+) IJP
DAHL	67	PR 163 1377	O.I. Dahl <i>et al.</i>	(LRL) IJP

REFID=56781
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