Reference = KOZYREV 16; PL B760 314
Verifier code = EIDELMAN

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.

PLEASE READ NOW

PLEASE REPLY WITHIN ONE WEEK

Simon Eidelman

EMAIL: simon.eidelman@cern.ch

March 20, 2017

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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LIGHT UNFLAVORED MESONS
($S = C = B = 0$)

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

NODE=MXXX005

NODE=MXXX005

$\phi(1020)$

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

NODE=M004

$\phi(1020)$ MASS

NODE=M004M

NODE=M004M

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
1019.460±0.016 OUR AVERAGE					
1019.457±0.061	610k	KOZYREV	16	CMD3	$e^+e^- \to K^0_S K^0_L$
1019.462±0.042±0.056	28k	[1] LEES	14H	BABR	$e^+e^- \to K^0_S K^0_L \gamma$
1019.51 ±0.02 ±0.05		[2] LEES	13Q	BABR	$e^+e^- \to K^+K^-\gamma$
1019.30 ±0.02 ±0.10	105k	AKHMETSHIN	06	CMD2	0.98–1.06 $e^+e^- \to \pi^+\pi^-\pi^0$
1019.52 ±0.05 ±0.05	17.4k	AKHMETSHIN	05	CMD2	0.60-1.38 $e^+e^- \to \eta\gamma$
1019.483±0.011±0.025	272k	[3] AKHMETSHIN	04	CMD2	$e^+e^- \to K^0_L K^0_S$
1019.42 ±0.05	1900k	[4] ACHASOV	01E	SND	$e^+e^- \to K^+K^-$, $K_S K_L$, $\pi^+\pi^-\pi^0$
1019.40 ±0.04 ±0.05	23k	AKHMETSHIN	01B	CMD2	$e^+e^- \to \eta\gamma$
1019.36 ±0.12		[5] ACHASOV	00B	SND	$e^+e^- \to \eta\gamma$
1019.38 ±0.07 ±0.08	2200	[6] AKHMETSHIN	99F	CMD2	$e^+e^- \to \pi^+\pi^- \geq 2\gamma$
1019.51 ±0.07 ±0.10	11169	AKHMETSHIN	98	CMD2	$e^+e^- \to \pi^+\pi^-\pi^0$
1019.5 ±0.4		BARBERIS	98	OMEG	450 $pp \to pp2K^+2K^-$
1019.42 ±0.06	55600	AKHMETSHIN	95	CMD2	$e^+e^- \to$ hadrons
1019.7 ±0.3	2012	DAVENPORT	86	MPSF	400 pA $\to$ 4KX
1019.7 ±0.1 ±0.1	5079	ALBRECHT	85D	ARG	10 $e^+e^- \to K^+K^-$X
1019.3 ±0.1	1500	ARENTON	82	AEMS	11.8 polar. $pp \to KK$
1019.67 ±0.17	25080	[7] PELLINEN	82	RVUE	
1019.52 ±0.13	3681	BUKIN	78C	OLYA	$e^+e^- \to$ hadrons
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1019.48 ±0.01		LEES	13F	BABR	$D^+ \to K^+K^-\pi^+$
1019.441±0.008±0.080	542k	[8] AKHMETSHIN	08	CMD2	1.02 $e^+e^- \to K^+K^-$
1019.63 ±0.07	12540	[9] AUBERT,B	05J	BABR	$D^0 \to \overline{K}^0 K^+K^-$
1019.8 ±0.7		ARMSTRONG	86	OMEG	85 $\pi^+/pp \to \pi^+/p4Kp$
1020.1 ±0.11	5526	[9] ATKINSON	86	OMEG	20–70 γp
1019.7 ±1.0		BEBEK	86	CLEO	$e^+e^- \to \Upsilon(4S)$
1019.411±0.008	642k	[10] DIJKSTRA	86	SPEC	100–200 $\pi^\pm$, $\overline{p}$, p, $K^\pm$, on Be
1020.9 ±0.2		[9] FRAME	86	OMEG	13 $K^+p \to \phi K^+p$
1021.0 ±0.2		[9] ARMSTRONG	83B	OMEG	18.5 $K^-p \to K^-K^+\Lambda$
1020.0 ±0.5		[9] ARMSTRONG	83B	OMEG	18.5 $K^-p \to K^-K^+\Lambda$
1019.7 ±0.3		[9] BARATE	83	GOLI	190 π^-Be $\to$ 2μX
1019.8 ±0.2 ±0.5	766	IVANOV	81	OLYA	1–1.4 $e^+e^- \to K^+K^-$
1019.4 ±0.5	337	COOPER	78B	HBC	0.7–0.8 $\overline{p}p \to K^0_S K^0_L \pi^+\pi^-$
1020 ±1	383	[9] BALDI	77	CNTR	10 $\pi^-p \to \pi^-\phi p$
1018.9 ±0.6	800	COHEN	77	ASPK	6 $\pi^\pm N \to K^+K^-N$
1019.7 ±0.5	454	KALBFLEISCH	76	HBC	2.18 $K^-p \to \Lambda K\overline{K}$
1019.4 ±0.8	984	BESCH	74	CNTR	2 $\gamma p \to pK^+K^-$

YOUR DATA

OCCUR=2

OCCUR=2

1020.3 ±0.4	100		BALLAM	73	HBC	2.8–9.3 γp	
1019.4 ±0.7			BINNIE	73B	CNTR	$\pi^- p \rightarrow \phi n$	
1019.6 ±0.5	120	11	AGUILAR-...	72B	HBC	3.9,4.6 $K^- p \rightarrow \Lambda K^+ K^-$	
1019.9 ±0.5	100	11	AGUILAR-...	72B	HBC	3.9,4.6 $K^- p \rightarrow K^- p K^+ K^-$	OCCUR=2
1020.4 ±0.5	131		COLLEY	72	HBC	10 $K^+ p \rightarrow K^+ p \phi$	
1019.9 ±0.3	410		STOTTLE...	71	HBC	2.9 $K^- p \rightarrow \Sigma / \Lambda K \overline{K}$	

[1] Using a vector meson dominance model with contribution from $\phi(1020)$ and higher mass excitations of $\rho(770), \omega(782)$ and $\phi(1020)$. NODE=M004M;LINKAGE=E

[2] Using a phenomenological model based on KUHN 90 with a sum of Breit-Wigner resonances for $\rho(770)$, $\omega(782)$, $\phi(1020)$ and their higher mass excitations. NODE=M004M;LINKAGE=C

[3] Update of AKHMETSHIN 99D NODE=M004M;LINKAGE=GS

[4] From the combined fit assuming that the total $\phi(1020)$ production cross section is saturated by those of K^+K^-, $K_S K_L$, $\pi^+\pi^-\pi^0$, and $\eta\gamma$ decays modes and using ACHASOV 00B for the $\eta\gamma$ decay mode. NODE=M004M;LINKAGE=AE

[5] Using a total width of 4.43 ± 0.05 MeV. Systematic uncertainty included. NODE=M004M;LINKAGE=G2

[6] Using a total width of 4.43 ± 0.05 MeV. NODE=M004M;LINKAGE=F2

[7] PELLINEN 82 review includes AKERLOF 77, DAUM 81, BALDI 77, AYRES 74, DEGROOT 74. NODE=M004M;LINKAGE=R

[8] Strongly correlated with AKHMETSHIN 04. NODE=M004M;LINKAGE=AH

[9] Systematic errors not evaluated. NODE=M004M;LINKAGE=A

[10] Weighted and scaled average of 12 measurements of DIJKSTRA 86. NODE=M004M;LINKAGE=B

[11] Mass errors enlarged by us to $\Gamma/\sqrt{N}$; see the note with the $K^*(892)$ mass. NODE=M004M;LINKAGE=D

ϕ(1020) WIDTH

NODE=M004W

	VALUE (MeV)	*EVTS*		*DOCUMENT ID*		*TECN*	*COMMENT*	NODE=M004W
	4.247±0.016 OUR AVERAGE	Error includes scale factor of 1.2.						
YOUR DATA	4.240±0.017	610k		KOZYREV	16	CMD3	$e^+e^- \rightarrow K^0_S K^0_L$	
	4.205±0.103±0.067	28k	1	LEES	14H	BABR	$e^+e^- \rightarrow K^0_S K^0_L \gamma$	
	4.29 ±0.04 ±0.07		2	LEES	13Q	BABR	$e^+e^- \rightarrow K^+K^-\gamma$	
	4.30 ±0.06 ±0.17	105k		AKHMETSHIN	06	CMD2	0.98–1.06 $e^+e^- \rightarrow \pi^+\pi^-\pi^0$	
	4.280±0.033±0.025	272k	3	AKHMETSHIN	04	CMD2	$e^+e^- \rightarrow K^0_L K^0_S$	
	4.21 ±0.04	1900k	4	ACHASOV	01E	SND	$e^+e^- \rightarrow K^+K^-$, $K_S K_L$, $\pi^+\pi^-\pi^0$	
	4.44 ±0.09	55600		AKHMETSHIN	95	CMD2	$e^+e^- \rightarrow$ hadrons	
	4.5 ±0.7	1500		ARENTON	82	AEMS	11.8 polar. $pp \rightarrow KK$	
	4.2 ±0.6	766	5	IVANOV	81	OLYA	1–1.4 $e^+e^- \rightarrow K^+K^-$	
	4.3 ±0.6		5	CORDIER	80	DM1	$e^+e^- \rightarrow \pi^+\pi^-\pi^0$	
	4.36 ±0.29	3681	5	BUKIN	78C	OLYA	$e^+e^- \rightarrow$ hadrons	
	4.4 ±0.6	984	5	BESCH	74	CNTR	2 $\gamma p \rightarrow pK^+K^-$	
	4.67 ±0.72	681	5	BALAKIN	71	OSPK	$e^+e^- \rightarrow$ hadrons	
	4.09 ±0.29			BIZOT	70	OSPK	$e^+e^- \rightarrow$ hadrons	
	• • • We do not use the following data for averages, fits, limits, etc. • • •							
	4.37 ±0.02			LEES	13F	BABR	$D^+ \rightarrow K^+K^-\pi^+$	
	4.24 ±0.02 ±0.03	542k	6	AKHMETSHIN	08	CMD2	1.02 $e^+e^- \rightarrow K^+K^-$	
	4.28 ±0.13	12540	7	AUBERT,B	05J	BABR	$D^0 \rightarrow \overline{K}^0 K^+K^-$	
	4.45 ±0.06	271k		DIJKSTRA	86	SPEC	100 π^- Be	
	3.6 ±0.8	337	5	COOPER	78B	HBC	0.7–0.8 $\overline{p}p \rightarrow K^0_S K^0_L \pi^+\pi^-$	
	4.5 ±0.50	1300	5,7	AKERLOF	77	SPEC	400 pA $\rightarrow K^+K^-$X	
	4.5 ±0.8	500	5,7	AYRES	74	ASPK	3–6 $\pi^- p \rightarrow K^+K^- n$, $K^- p \rightarrow K^+K^-\Lambda/\Sigma^0$	
	3.81 ±0.37			COSME	74B	OSPK	$e^+e^- \rightarrow K^0_L K^0_S$	
	3.8 ±0.7	454	5	BORENSTEIN	72	HBC	2.18 $K^- p \rightarrow K\overline{K}n$	

[1] Using a vector meson dominance model with contribution from $\phi(1020)$ and higher mass excitations of $\rho(770), \omega(782)$ and $\phi(1020)$. NODE=M004W;LINKAGE=E

[2] Using a phenomenological model based on KUHN 90 with a sum of Breit-Wigner resonances for $\rho(770)$, $\omega(782)$, $\phi(1020)$ and their higher mass excitations. NODE=M004W;LINKAGE=C

[3] Update of AKHMETSHIN 99D NODE=M004W;LINKAGE=GS

[4] From the combined fit assuming that the total $\phi(1020)$ production cross section is saturated by those of K^+K^-, $K_S K_L$, $\pi^+\pi^-\pi^0$, and $\eta\gamma$ decays modes and using ACHASOV 00B for the $\eta\gamma$ decay mode. NODE=M004W;LINKAGE=AE

[5] Width errors enlarged by us to $4\Gamma/\sqrt{N}$; see the note with the $K^{*}(892)$ mass. NODE=M004W;LINKAGE=D
[6] Strongly correlated with AKHMETSHIN 04. NODE=M004W;LINKAGE=AH
[7] Systematic errors not evaluated. NODE=M004W;LINKAGE=A

$\phi(1020)$ $\Gamma(i)\Gamma(e^+e^-)/\Gamma^2(\text{total})$

NODE=M004224

$\Gamma(K^0_L K^0_S)/\Gamma_{\text{total}} \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ $\Gamma_2/\Gamma \times \Gamma_9/\Gamma$

NODE=M004G6
NODE=M004G6

	VALUE (units 10^{-5})	EVTS	DOCUMENT ID	TECN	COMMENT	
	10.07 ±0.13 OUR AVERAGE					
YOUR DATA	10.078±0.223	610k	[1] KOZYREV 16	CMD3	$e^+e^- \to K^0_S K^0_L$	
	10.01 ±0.04 ±0.17	272k	[2] AKHMETSHIN 04	CMD2	$e^+e^- \to K^0_L K^0_S$	ERROR=8
	10.27 ±0.07 ±0.34	500k	[3] ACHASOV 01E	SND	$e^+e^- \to K^+K^-$, $K_S K_L$, $\pi^+\pi^-\pi^0$	

YOUR NOTE [1] KOZYREV 16 also reports $\Gamma(e^+e^-)$ B($\phi \to K^0_S K^0_L$) = (0.428 ± 0.001 ± 0.009) keV. NODE=M004G6;LINKAGE=A

[3] From the combined fit assuming that the total $\phi(1020)$ production cross section is saturated by those of K^+K^-, $K_S K_L$, $\pi^+\pi^-\pi^0$, and $\eta\gamma$ decays modes and using ACHASOV 00B for the $\eta\gamma$ decay mode. NODE=M004G;LINKAGE=AE

[2] Update of AKHMETSHIN 99D NODE=M004G;LINKAGE=GS

$\phi(1020)$ REFERENCES

NODE=M004

YOUR PAPER	KOZYREV	16	PL B760 314	E.A. Kozyrev *et al.*	(CMD3 Collab.)	REFID=57514
	LEES	14H	PR D89 092002	J.P. Lees *et al.*	(BABAR Collab)	REFID=55940
	LEES	13F	PR D87 052010	J.P. Lees *et al.*	(BABAR Collab.)	REFID=55127
	LEES	13Q	PR D88 032013	J.P. Lees *et al.*	(BABAR Collab.)	REFID=55404
	AKHMETSHIN	08	PL B669 217	R.R. Akhmetshin *et al.*	(CMD-2 Collab.)	REFID=52572
	AKHMETSHIN	06	PL B642 203	R.R. Akhmetshin *et al.*	(CMD-2 Collab.)	REFID=51465
	AKHMETSHIN	05	PL B605 26	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)	REFID=50330
	AUBERT,B	05J	PR D72 052008	B. Aubert *et al.*	(BABAR Collab.)	REFID=50824
	AKHMETSHIN	04	PL B578 285	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)	REFID=49609
	ACHASOV	01E	PR D63 072002	M.N. Achasov *et al.*	(Novosibirsk SND Collab.)	REFID=48311
	AKHMETSHIN	01B	PL B509 217	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)	REFID=48167
	ACHASOV	00B	JETP 90 17	M.N. Achasov *et al.*	(Novosibirsk SND Collab.)	REFID=47425
			Translated from ZETF 117 22.			
	AKHMETSHIN	99D	PL B466 385	R.R. Akhmetshin *et al.*		REFID=47397
	Also		PL B508 217 (errat.)	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)	REFID=48328
	AKHMETSHIN	99F	PL B460 242	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)	REFID=47473
	AKHMETSHIN	98	PL B434 426	R.R. Akhmetshin *et al.*	(CMD-2 Collab.)	REFID=46325
	BARBERIS	98	PL B432 436	D. Barberis *et al.*	(Omega Expt.)	REFID=46344
	AKHMETSHIN	95	PL B364 199	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)	REFID=44617
	KUHN	90	ZPHY C48 445	J.H. Kuhn *et al.*	(MPIM)	REFID=45862
	ARMSTRONG	86	PL 166B 245	T.A. Armstrong *et al.*	(ATHU, BARI, BIRM+)	REFID=20563
	ATKINSON	86	ZPHY C30 521	M. Atkinson *et al.*	(BONN, CERN, GLAS+)	REFID=20564
	BEBEK	86	PRL 56 1893	C. Bebek *et al.*	(CLEO Collab.)	REFID=11540
	DAVENPORT	86	PR D33 2519	T.F. Davenport	(TUFTS, ARIZ, FNAL, FSU, NDAM+)	REFID=20567
	DIJKSTRA	86	ZPHY C31 375	H. Dijkstra *et al.*	(ANIK, BRIS, CERN+)	REFID=20568
	FRAME	86	NP B276 667	D. Frame *et al.*	(GLAS)	REFID=20569
	ALBRECHT	85D	PL 153B 343	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=20562
	ARMSTRONG	83B	NP B224 193	T.A. Armstrong *et al.*	(BARI, BIRM, CERN+)	REFID=20558
	BARATE	83	PL 121B 449	R. Barate *et al.*	(SACL, LOIC, SHMP, IND)	REFID=12177
	ARENTON	82	PR D25 2241	M.W. Arenton *et al.*	(ANL, ILL)	REFID=20556
	PELLINEN	82	PS 25 599	A. Pellinen, M. Roos	(HELS)	REFID=20557
	DAUM	81	PL 100B 439	C. Daum *et al.*	(AMST, BRIS, CERN, CRAC+)	REFID=20552
	IVANOV	81	PL 107B 297	P.M. Ivanov *et al.*	(NOVO)	REFID=20553
	Also		Private Comm.	S.I. Eidelman	(NOVO)	REFID=20554
	CORDIER	80	NP B172 13	A. Cordier *et al.*	(LALO)	REFID=20240
	BUKIN	78C	SJNP 27 516	A.D. Bukin *et al.*	(NOVO)	REFID=20544
			Translated from YAF 27 976.			
	COOPER	78B	NP B146 1	A.M. Cooper *et al.*	(TATA, CERN, CDEF+)	REFID=20235
	AKERLOF	77	PRL 39 861	C.W. Akerlof *et al.*	(FNAL, MICH, PURD)	REFID=20534
	BALDI	77	PL 68B 381	R. Baldi *et al.*	(GEVA)	REFID=20536
	COHEN	77	PRL 38 269	D. Cohen *et al.*	(ANL)	REFID=20538
	KALBFLEISCH	76	PR D13 22	G.R. Kalbfleisch, R.C. Strand, J.W. Chapman	(BNL+)	REFID=20531
	AYRES	74	PRL 32 1463	D.S. Ayres *et al.*	(ANL)	REFID=20522
	BESCH	74	NP B70 257	H.J. Besch *et al.*	(BONN)	REFID=20523
	COSME	74B	PL 48B 159	G. Cosme *et al.*	(ORSAY)	REFID=20526
	DEGROOT	74	NP B74 77	A.J. de Groot *et al.*	(AMST, NIJM)	REFID=20527
	BALLAM	73	PR D7 3150	J. Ballam *et al.*	(SLAC, LBL)	REFID=20520
	BINNIE	73B	PR D8 2789	D.M. Binnie *et al.*	(LOIC, SHMP)	REFID=20216
	AGUILAR-...	72B	PR D6 29	M. Aguilar-Benitez *et al.*	(BNL)	REFID=20205
	BORENSTEIN	72	PR D5 1559	S.R. Borenstein *et al.*	(BNL, MICH)	REFID=20215
	COLLEY	72	NP B50 1	D.C. Colley *et al.*	(BIRM, GLAS)	REFID=20519
	BALAKIN	71	PL 34B 328	V.E. Balakin *et al.*	(NOVO)	REFID=20507
	STOTTLE...	71	Thesis ORO 2504 170	A.R. Stottlemyer	(UMD)	REFID=20512
	BIZOT	70	PL 32B 416	J.C. Bizot *et al.*	(ORSAY)	REFID=20501
	Also		Liverpool Sym. 69	J.P. Perez-y-Jorba		REFID=20502