Reference = ADOLPH 15; PL B740 303
Verifier code = COMPASS

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

Yann Bedfer

EMAIL: yann.bedfer@cern.ch

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

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

NODE=MXXX005

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=M012

$a_2(1320)$

$I^G(J^{PC}) = 1^-(2^{++})$

$a_2(1320)$ MASS

NODE=M012205

$\eta\pi$ MODE

NODE=M012M3

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT

NODE=M012M3

The data in this block is included in the average printed for a previous datablock.

1317.7± 1.4 OUR AVERAGE

1308 ± 9		BARBERIS	00H			450 $pp \to p_f \eta\pi^0 p_s$
1316 ± 9		BARBERIS	00H			450 $pp \to \Delta_f^{++} \eta\pi^- p_s$ OCCUR=2
1317 ± 1 ±2		THOMPSON	97	MPS		18 $\pi^- p \to \eta\pi^- p$
1315 ± 5 ±2		[1] AMSLER	94D	CBAR		0.0 $\overline{p}p \to \pi^0\pi^0\eta$
1325.1± 5.1		AOYAGI	93	BKEI		$\pi^- p \to \eta\pi^- p$
1317.7± 1.4±2.0		BELADIDZE	93	VES		$37\pi^- N \to \eta\pi^- N$
1323 ± 8	1000	[2] KEY	73	OSPK	−	6 $\pi^- p \to p\pi^-\eta$

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

YOUR DATA	1315 ±12		[3] ADOLPH	15	COMP		191 $\pi^- p \to \eta^{(\prime)}\pi^- p$
	1309 ± 4		ANISOVICH	09	RVUE		$\overline{p}p$, πN
	1324 ± 5		ARMSTRONG	93C	E760	0	$\overline{p}p \to \pi^0\eta\eta \to 6\gamma$
	1336.2± 1.7	2561	DELFOSSE	81	SPEC	+	$\pi^\pm p \to p\pi^\pm\eta$
	1330.7± 2.4	1653	DELFOSSE	81	SPEC	−	$\pi^\pm p \to p\pi^\pm\eta$ OCCUR=2
	1324 ± 8	6200	[2,4] CONFORTO	73	OSPK	−	6 $\pi^- p \to p$MM$^-$

[1] The systematic error of 2 MeV corresponds to the spread of solutions. NODE=M012M3;LINKAGE=DD

[2] Error includes 5 MeV systematic mass-scale error. NODE=M012M3;LINKAGE=E

YOUR NOTE [3] ADOLPH 15 value is derived from a Breit-Wigner fit with mass-dependent width taking the $\eta\pi$ and $\rho\pi$ channels into account. NODE=M012M3;LINKAGE=A

[4] Missing mass with enriched MMS = $\eta\pi^-$, $\eta = 2\gamma$. NODE=M012M3;LINKAGE=M

$a_2(1320)$ WIDTH

NODE=M012210

$\eta\pi$ MODE

NODE=M012W3

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT

NODE=M012W3

The data in this block is included in the average printed for a previous datablock.

111.1± 2.4 OUR AVERAGE

115 ±20		BARBERIS	00H			450 $pp \to p_f \eta\pi^0 p_s$
112 ±14		BARBERIS	00H			450 $pp \to \Delta_f^{++} \eta\pi^- p_s$ OCCUR=2
112 ± 3 ±2		[1] AMSLER	94D	CBAR		0.0 $\overline{p}p \to \pi^0\pi^0\eta$
103 ± 6 ±3		BELADIDZE	93	VES		$37\pi^- N \to \eta\pi^- N$
112.2± 5.7	2561	DELFOSSE	81	SPEC	+	$\pi^\pm p \to p\pi^\pm\eta$
116.6± 7.7	1653	DELFOSSE	81	SPEC	−	$\pi^\pm p \to p\pi^\pm\eta$ OCCUR=2
108 ± 9	1000	KEY	73	OSPK	−	6 $\pi^- p \to p\pi^-\eta$

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

YOUR DATA	119 ±14		[2] ADOLPH	15	COMP		191 $\pi^- p \to \eta^{(\prime)}\pi^- p$
	110 ± 4		ANISOVICH	09	RVUE		$\overline{p}p$, πN
	127 ± 2 ±2		[3] THOMPSON	97	MPS		18 $\pi^- p \to \eta\pi^- p$
	118 ±10		ARMSTRONG	93C	E760	0	$\overline{p}p \to \pi^0\eta\eta \to 6\gamma$
	104 ± 9	6200	[4] CONFORTO	73	OSPK	−	6 $\pi^- p \to p$MM$^-$

[1] The systematic error of 2 MeV corresponds to the spread of solutions.
YOUR NOTE [2] ADOLPH 15 value is derived from a Breit-Wigner fit with mass-dependent width taking the $\eta\pi$ and $\rho\pi$ channels into account.
[3] Resolution is not unfolded.
[4] Missing mass with enriched MMS = $\eta\pi^-$, $\eta = 2\gamma$.

NODE=M012W3;LINKAGE=DD
NODE=M012W3;LINKAGE=B
NODE=M012W3;LINKAGE=A
NODE=M012W3;LINKAGE=M

$a_2(1320)$ BRANCHING RATIOS

NODE=M012225

$\Gamma(\eta'(958)\pi)/\Gamma(\eta\pi)$ Γ_8/Γ_5

NODE=M012R13
NODE=M012R13

VALUE	DOCUMENT ID		TECN	COMMENT
0.038±0.005 OUR AVERAGE				
YOUR DATA 0.05 ±0.02	ADOLPH	15	COMP	191 $\pi^- p \rightarrow \eta^{(\prime)}\pi^- p$
0.032±0.009	ABELE	97C	CBAR	0.0 $\overline{p}p \rightarrow \pi^0\pi^0\eta'$
0.047±0.010±0.004	[1] BELADIDZE	93	VES	37$\pi^- N \rightarrow a_2^- N$
0.034±0.008±0.005	BELADIDZE	92	VES	36π^- C $\rightarrow a_2^-$ C

[1] Using B($\eta' \rightarrow \pi^+\pi^-\eta$) = 0.441, B($\eta \rightarrow \gamma\gamma$) = 0.389 and B($\eta \rightarrow \pi^+\pi^-\pi^0$) = 0.236.

NODE=M012R13;LINKAGE=A

$a_2(1320)$ REFERENCES

NODE=M012

YOUR PAPER ADOLPH	15	PL B740 303	M. Adolph *et al.*	(COMPASS Collab.)
ANISOVICH	09	IJMP A24 2481	V.V. Anisovich, A.V. Sarantsev	
BARBERIS	00H	PL B488 225	D. Barberis *et al.*	(WA 102 Collab.)
ABELE	97C	PL B404 179	A. Abele *et al.*	(Crystal Barrel Collab.)
THOMPSON	97	PRL 79 1630	D.R. Thompson *et al.*	(BNL E852 Collab.)
AMSLER	94D	PL B333 277	C. Amsler *et al.*	(Crystal Barrel Collab.)
AOYAGI	93	PL B314 246	H. Aoyagi *et al.*	(BKEI Collab.)
ARMSTRONG	93C	PL B307 394	T.A. Armstrong *et al.*	(FNAL, FERR, GENO+)
BELADIDZE	93	PL B313 276	G.M. Beladidze *et al.*	(VES Collab.)
BELADIDZE	92	ZPHY C54 235	G.M. Beladidze *et al.*	(VES Collab.)
DELFOSSE	81	NP B183 349	A. Delfosse *et al.*	(GEVA, LAUS)
CONFORTO	73	PL 45B 154	G. Conforto *et al.*	(EFI, FNAL, TNTO+)
KEY	73	PRL 30 503	A.W. Key *et al.*	(TNTO, EFI, FNAL, WISC)

REFID=56385
REFID=52719
REFID=47964
REFID=45531
REFID=45584
REFID=44093
REFID=43599
REFID=43587
REFID=43598
REFID=42171
REFID=21277
REFID=21243
REFID=21246

NODE=M017

$a_4(2040)$

$I^G(J^{PC}) = 1^-(4^{++})$

$a_4(2040)$ MASS

NODE=M017M

NODE=M017M

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
1995^{+10}_{-8} OUR AVERAGE		Error includes scale factor of 1.1.				
YOUR DATA 1900^{+80}_{-20}		ADOLPH	15	COMP		191 $\pi^- p \rightarrow \eta^{(\prime)}\pi^- p$
$1885\pm13^{+50}_{-2}$	420k	ALEKSEEV	10	COMP		190 $\pi^- Pb \rightarrow \pi^-\pi^-\pi^+ Pb'$
1985±10±13	145k	LU	05	B852		18 $\pi^- p \rightarrow \omega\pi^-\pi^0 p$
1996±25±43		CHUNG	02	B852		18.3 $\pi^- p \rightarrow 3\pi p$
2005^{+25}_{-45}		[1] ANISOVICH	01F	SPEC		2.0 $\overline{p}p \rightarrow 3\pi^0$, $\pi^0\eta$, $\pi^0\eta'$
$2000\pm40^{+60}_{-20}$		IVANOV	01	B852		18 $\pi^- p \rightarrow \eta'\pi^- p$
1944± 8±50		[2] AMELIN	99	VES		37 $\pi^- A \rightarrow \omega\pi^-\pi^0 A^*$
2010±20		[3] DONSKOV	96	GAM2	0	38 $\pi^- p \rightarrow \eta\pi^0 n$
2040±30		[4] CLELAND	82B	SPEC	±	50 $\pi p \rightarrow K^0_S K^\pm p$
2030±50		[5] CORDEN	78C	OMEG	0	15 $\pi^- p \rightarrow 3\pi n$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
2004± 6	80k	[6] UMAN	06	E835		5.2 $\overline{p}p \rightarrow \eta\eta\pi^0$
1903±10		[7] BALDI	78	SPEC	−	10 $\pi^- p \rightarrow p K^0_S K^-$

[1] From the combined analysis of ANISOVICH 99C, ANISOVICH 99E, and ANISOVICH 01F.
[2] May be a different state.
[3] From a simultaneous fit to the G_+ and G_0 wave intensities.
[4] From an amplitude analysis.
[5] $J^P = 4^+$ is favored, though $J^P = 2^+$ cannot be excluded.
[6] Statistical error only.
[7] From a fit to the Y^0_8 moment. Limited by phase space.

NODE=M017M;LINKAGE=AN
NODE=M017M;LINKAGE=DM
NODE=M017M;LINKAGE=A
NODE=M017M;LINKAGE=C
NODE=M017M;LINKAGE=M
NODE=M017M;LINKAGE=ST
NODE=M017M;LINKAGE=Y

$a_4(2040)$ WIDTH

NODE=M017W

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
257^{+25}_{-23} OUR AVERAGE		Error includes scale factor of 1.3. See the ideogram below.				
YOUR DATA 300^{+80}_{-100}		ADOLPH	15	COMP		191 $\pi^- p \rightarrow \eta^{(\prime)} \pi^- p$
$294 \pm 25^{+46}_{-19}$	420k	ALEKSEEV	10	COMP		190 $\pi^- Pb \rightarrow \pi^- \pi^- \pi^+ Pb'$
$231 \pm 30 \pm 46$	145k	LU	05	B852		18 $\pi^- p \rightarrow \omega \pi^- \pi^0 p$
$298 \pm 81 \pm 85$		CHUNG	02	B852		18.3 $\pi^- p \rightarrow 3\pi p$
180 ± 30		[1] ANISOVICH	01F	SPEC		2.0 $\bar{p}p \rightarrow 3\pi^0$, $\pi^0\eta$, $\pi^0\eta'$
$350 \pm 100^{+70}_{-50}$		IVANOV	01	B852		18 $\pi^- p \rightarrow \eta' \pi^- p$
$324 \pm 26 \pm 75$		[2] AMELIN	99	VES		37 $\pi^- A \rightarrow \omega \pi^- \pi^0 A^*$
370 ± 80		[3] DONSKOV	96	GAM2	0	38 $\pi^- p \rightarrow \eta \pi^0 n$
380 ± 150		[4] CLELAND	82B	SPEC	$\pm$	50 $\pi p \rightarrow K^0_S K^\pm p$
510 ± 200		[5] CORDEN	78C	OMEG	0	15 $\pi^- p \rightarrow 3\pi n$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
401 ± 16	80k	[6] UMAN	06	E835		5.2 $\bar{p}p \rightarrow \eta\eta\pi^0$
166 ± 43		[7] BALDI	78	SPEC	$-$	10 $\pi^- p \rightarrow p K^0_S K^-$

[1] From the combined analysis of ANISOVICH 99C, ANISOVICH 99E, and ANISOVICH 01F. NODE=M017W;LINKAGE=AN
[2] May be a different state. NODE=M017W;LINKAGE=DM
[3] From a simultaneous fit to the G_+ and G_0 wave intensities. NODE=M017W;LINKAGE=A
[4] From an amplitude analysis. NODE=M017W;LINKAGE=C
[5] $J^P = 4^+$ is favored, though $J^P = 2^+$ cannot be excluded. NODE=M017W;LINKAGE=M
[6] Statistical error only. NODE=M017W;LINKAGE=ST
[7] From a fit to the Y^0_8 moment. Limited by phase space. NODE=M017W;LINKAGE=Y

$a_4(2040)$ BRANCHING RATIOS

NODE=M017220

$\Gamma(\eta'(958)\pi)/\Gamma(\eta\pi)$ **Γ_8/Γ_7**

NODE=M017R01

VALUE	DOCUMENT ID		TECN	COMMENT
YOUR DATA **0.23±0.07**	ADOLPH	15	COMP	191 $\pi^- p \rightarrow \eta^{(\prime)} \pi^- p$

NODE=M017R01

$a_4(2040)$ REFERENCES

NODE=M017

YOUR PAPER	ADOLPH	15	PL B740 303	M. Adolph *et al.*	(COMPASS Collab.)	REFID=56385
	ALEKSEEV	10	PRL 104 241803	M.G. Alekseev *et al.*	(COMPASS Collab.)	REFID=53356
	UMAN	06	PR D73 052009	I. Uman *et al.*	(FNAL E835)	REFID=51063
	LU	05	PRL 94 032002	M. Lu *et al.*	(BNL E852 Collab.)	REFID=50459
	CHUNG	02	PR D65 072001	S.U. Chung *et al.*	(BNL E852 Collab.)	REFID=48837
	ANISOVICH	01F	PL B517 261	A.V. Anisovich *et al.*		REFID=48352
	IVANOV	01	PRL 86 3977	E.I. Ivanov *et al.*	(BNL E852 Collab.)	REFID=48317
	AMELIN	99	PAN 62 445	D.V. Amelin *et al.*	(VES Collab.)	REFID=46910
			Translated from YAF 62 487.			
	ANISOVICH	99C	PL B452 173	A.V. Anisovich *et al.*		REFID=46903
	ANISOVICH	99E	PL B452 187	A.V. Anisovich *et al.*		REFID=46902
	DONSKOV	96	PAN 59 982	S.V. Donskov *et al.*	(GAMS Collab.) IGJPC	REFID=45207
			Translated from YAF 59 1027.			
	CLELAND	82B	NP B208 228	W.E. Cleland *et al.*	(DURH, GEVA, LAUS+)	REFID=21281
	BALDI	78	PL 74B 413	R. Baldi *et al.*	(GEVA) JP	REFID=21783
	CORDEN	78C	NP B136 77	M.J. Corden *et al.*	(BIRM, RHEL, TELA+) JP	REFID=20859