NODE=M274

$\phi(2240)$

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

OMITTED FROM SUMMARY TABLE

See the review on "Spectroscopy of Light Meson Resonances." NODE=M274

$\phi(2240)$ MASS

NODE=M274M

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
2234 ±12 OUR AVERAGE	Error includes scale factor of 1.6. See the ideogram below.			
2273.7± 5.7±19.3	[1] ABLIKIM	21AP	BES3	$e^+e^- \to K^0_S K^0_L$
2201 ±19	[2] LEES	20	BABR	$e^+e^- \to K^+K^-\gamma$
2227 ± 9 ± 9	[3] LEES	20	RVUE	$e^+e^- \to K^+K^-$
2239.2± 7.1±11.3	[4] ABLIKIM	19L	BES3	$e^+e^- \to K^+K^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2191.6± 5.0	[5] CHEN	25D	RVUE	$e^+e^- \to K^+K^-,\ K^0_S K^0_L$

NODE=M274M OCCUR=2

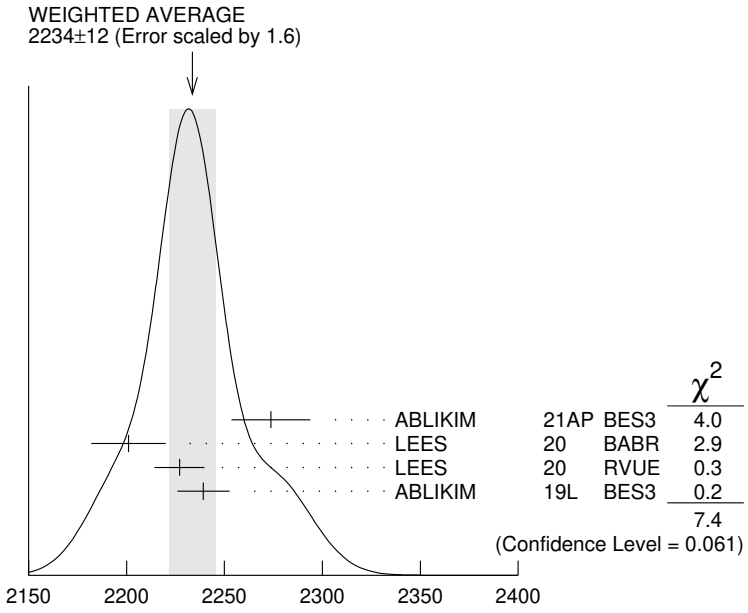
[1] ABLIKIM 21AP fit to the cross section between 2.00 and 3.08 GeV with a sum of Breit-Wigner amplitude and a non-resonant contribution. The observed structure can be also due to $\rho(2150)$. NODE=M274M;LINKAGE=B

[2] LEES 20 fit to the BABAR data of LEES 13Q assuming a coherent sum of a single Breit-Wigner resonance and a nonresonant contribution. The resonance significance is 3.5 σ. NODE=M274M;LINKAGE=D

[3] LEES 20 fit to the BABAR data of LEES 13Q and BESIII data of ABLIKIM 19L assuming a coherent sum of a single Breit-Wigner resonance and a nonresonant contribution. NODE=M274M;LINKAGE=E

[4] ABLIKIM 19L observed structure can be due to both the $\phi(2170)$ and $\rho(2150)$. NODE=M274M;LINKAGE=C

[5] CHEN 25D combined analysis of the cross sections for $e^+e^- \to K^+K$ and $e^+e^- \to K^0_S K^0_L$ using data from ABLIKIM 19L and ABLIKIM 21AP. The parametrisation includes the interference between direct coupling process and resonance intermediate process with the isospin factor fixed to one. Other solutions which include additional vector resonances give 2190.0 ± 20.1 MeV and 2186.1 ± 6.2 MeV. NODE=M274M;LINKAGE=A



$\phi(2240)$ WIDTH

NODE=M274W

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
123 ±12 OUR AVERAGE				
86 ±44 ±51	[6] ABLIKIM	21AP	BES3	$e^+e^- \to K^0_S K^0_L$
70 ±38	[7] LEES	20	BABR	$e^+e^- \to K^+K^-\gamma$
127 ±14 ± 4	[8] LEES	20	RVUE	$e^+e^- \to K^+K^-$
139.8±12.3±20.6	[9] ABLIKIM	19L	BES3	$e^+e^- \to K^+K^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
86.1± 9.2	[10] CHEN	25D	RVUE	$e^+e^- \to K^+K^-,\ K^0_S K^0_L$

NODE=M274W OCCUR=2

[6] ABLIKIM 21AP fit to the cross section between 2.00 and 3.08 GeV with a sum of Breit-Wigner amplitude and a nonresonant contribution. The observed structure can be also due to $\rho(2150)$. NODE=M274W;LINKAGE=B

[7] LEES 20 fit to the BABAR data of LEES 13Q assuming a coherent sum of a single Breit-Wigner resonance and a non-resonant contribution. The resonance significance is 3.5 σ. NODE=M274W;LINKAGE=D

[8] LEES 20 fit to the BABAR data of LEES 13Q and BESIII data of ABLIKIM 19L assuming a coherent sum of a single Breit-Wigner resonance and a non-resonant contribution. NODE=M274W;LINKAGE=E

[9] ABLIKIM 19L observed structure can be due to both the $\phi(2170)$ and $\rho(2150)$. NODE=M274W;LINKAGE=C

[10] CHEN 25D combined analysis of the cross sections for $e^+e^- \to K^+K$ and $e^+e^- \to K^0_S K^0_L$ using data from ABLIKIM 19L and ABLIKIM 21AP. The parametrisation includes CHEN 25D the interference between direct coupling process and resonance intermediate process with the isospin factor fixed to one. Other solutions which include additional vector resonances give 85.9 ± 8.6 MeV and 86.4 ± 8.9 MeV. NODE=M274W;LINKAGE=A

$\phi(2240)$ DECAY MODES

NODE=M274215;NODE=M274

	Mode	Fraction (Γ_i/Γ)	
Γ_1	$K^0_S K^0_L$	seen	DESIG=1
Γ_2	K^+K^-	seen	DESIG=2
Γ_3	e^+e^-		DESIG=3

$\Gamma(K^0_S K^0_L) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_1\Gamma_3/\Gamma$

NODE=M274G01
NODE=M274G01

VALUE (eV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.9±0.6±0.7	[11] ABLIKIM	21AP	BES3	$e^+e^- \to K^0_S K^0_L$

[11] ABLIKIM 21AP fit to the cross section between 2.00 and 3.08 GeV with a sum of Breit-Wigner amplitude and a nonresonant contribution. The observed structure can be also due to $\rho(2150)$. NODE=M274G01;LINKAGE=A

$\phi(2240)$ BRANCHING RATIOS

NODE=M274225

$\Gamma(K^0_S K^0_L)/\Gamma_{total}$ Γ_1/Γ

NODE=M274R00
NODE=M274R00

VALUE	DOCUMENT ID		TECN	COMMENT
seen	CHEN	25D	RVUE	$e^+e^- \to K^+K^-,\ K^0_S K^0_L$
seen	ABLIKIM	21AP	BES3	$e^+e^- \to K^0_S K^0_L$

$\Gamma(K^+K^-)/\Gamma_{total}$ Γ_2/Γ

NODE=M274R01
NODE=M274R01

VALUE	DOCUMENT ID		TECN	COMMENT
seen	CHEN	25D	RVUE	$e^+e^- \to K^+K^-,\ K^0_S K^0_L$
seen	LEES	20	BABR	$e^+e^- \to K^+K^-,\ K^+K^-\gamma$
seen	[12] ABLIKIM	19L	BES3	$e^+e^- \to K^+K^-$

[12] ABLIKIM 19L observed structure can be due to both the $\phi(2170)$ and $\rho(2150)$. NODE=M274R01;LINKAGE=A

$\phi(2240)$ REFERENCES

NODE=M274

CHEN	25D	EPJ C85 1388	D.-Y. Chen *et al.*		REFID=63634
ABLIKIM	21AP	PR D104 092014	M. Ablikim *et al.*	(BESIII Collab.)	REFID=61448
LEES	20	PR D101 012011	J.P. Lees *et al.*	(BESIII Collab.)	REFID=60211
ABLIKIM	19L	PR D99 032001	M. Ablikim *et al.*	(BESIII Collab.)	REFID=59612
LEES	13Q	PR D88 032013	J.P. Lees *et al.*	(BABAR Collab.)	REFID=55404