Reference = LEES 16A; PR D93 012005
Verifier code = BABAR

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

Fabio Anulli

EMAIL: anulli@slac.stanford.edu

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
BINP, Budker Inst. of Nuclear Physics
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=M227

$a_0(1950)$

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

OMITTED FROM SUMMARY TABLE

Needs confirmation. Seen in $\gamma\gamma \to \eta_c(1S) \to K\overline{K}\pi$ by LEES 16A with significance 2.5 σ in $K^0_S K^\pm \pi^\mp$ and 4.2 σ in $K^+ K^- \pi^0$. Spin-2 explanation ($a_2(1950)$) is not compatible with data.

NODE=M227

$a_0(1950)$ MASS

NODE=M227M

	VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT	
							NODE=M227M
YOUR DATA	**1931±14±22**	12k	[1,2] LEES	16A	BABR	$\gamma\gamma \to \eta_c(1S) \to K\overline{K}\pi$	OCCUR=3
	• • • We do not use the following data for averages, fits, limits, etc. • • •						
YOUR DATA	1949±32±76	8k	[1] LEES	16A	BABR	$\gamma\gamma \to \eta_c(1S) \to K^0_S K^\pm \pi^\mp$	
YOUR DATA	1927±15±23	4k	[1] LEES	16A	BABR	$\gamma\gamma \to \eta_c(1S) \to K^+ K^- \pi^0$	OCCUR=2

YOUR NOTE [1] From a model-independent partial wave analysis fit to a relativistic Breit-Wigner function with a floating width. NODE=M227M;LINKAGE=A

YOUR NOTE [2] WEighted average of the $K^0_S K^\pm$ and $K^+ K^-$ decay modes. NODE=M227M;LINKAGE=B

$a_0(1950)$ WIDTH

NODE=M227W

	VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT	
							NODE=M227W
YOUR DATA	**271±22± 29**	12k	[1,2] LEES	16A	BABR	$\gamma\gamma \to \eta_c(1S) \to K\overline{K}\pi$	OCCUR=3
	• • • We do not use the following data for averages, fits, limits, etc. • • •						
YOUR DATA	265±36±110	8k	[1] LEES	16A	BABR	$\gamma\gamma \to \eta_c(1S) \to K^0_S K^\pm \pi^\mp$	
YOUR DATA	274±28± 30	4k	[1] LEES	16A	BABR	$\gamma\gamma \to \eta_c(1S) \to K^+ K^- \pi^0$	OCCUR=2

YOUR NOTE [1] From a model-independent partial wave analysis fit to a relativistic Breit-Wigner function with a floating mass. NODE=M227W;LINKAGE=A

YOUR NOTE [2] Weighted average of the $K^0_S K^\pm$ and $K^+ K^-$ decay modes. NODE=M227W;LINKAGE=B

$a_0(1950)$ BRANCHING RATIOS

NODE=M227225

$\Gamma(K\overline{K})/\Gamma_{total}$ **Γ_1/Γ**

NODE=M227R01
NODE=M227R01

	VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	**seen**	12k	[1] LEES	16A	BABR	$\gamma\gamma \to \eta_c(1S) \to K\overline{K}\pi$

YOUR NOTE [1] From a model-independent partial wave analysis. NODE=M227R01;LINKAGE=A

$a_0(1950)$ REFERENCES

NODE=M227

YOUR PAPER LEES 16A PR D93 012005 J.P. Lees *et al.* (BABAR Collab.) REFID=57125

$c\overline{c}$ MESONS

NODE=MXXX025

NODE=M026

$\eta_c(1S)$

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

$\eta_c(1S)$ BRANCHING RATIOS

NODE=M026225

HADRONIC DECAYS

NODE=M026305

$\Gamma(a_0(1950)\pi)/\Gamma_{total}$ — Γ_{23}/Γ

NODE=M026R00
NODE=M026R00

	VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	**seen**	12k	[1] LEES	16A	BABR	$\gamma\gamma \to \eta_c(1S) \to K\overline{K}\pi$

YOUR NOTE [1] From a model-independant partial wave analysis.

NODE=M026R00;LINKAGE=A

$\Gamma(a_2(1950)\pi)/\Gamma_{total}$ — Γ_{24}/Γ

NODE=M026R50
NODE=M026R50

	VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	**not seen**	12k	[1] LEES	16A	BABR	$\gamma\gamma \to \eta_c(1S) \to K\overline{K}\pi$

YOUR NOTE [1] From a model-independent partial wave analysis assuming the existence of a hypothetical tensor isovector $a_2(1950)$.

NODE=M026R50;LINKAGE=A

$\Gamma(K_0^*(1430)\overline{K})/\Gamma_{total}$ — Γ_{25}/Γ

NODE=M026R47
NODE=M026R47

	VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	seen	12k	[1] LEES	16A	BABR	$\gamma\gamma \to \eta_c(1S) \to K\overline{K}\pi$
	seen		LEES	14E	BABR	Dalitz anal. of $\eta_c \to K^+ K^- \eta/\pi^0$

YOUR NOTE [1] From a model-independant partial wave analysis.

NODE=M026R47;LINKAGE=A

$\Gamma(K_0^*(1950)\overline{K})/\Gamma_{total}$ — Γ_{27}/Γ

NODE=M026R49
NODE=M026R49

	VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	seen	12K	[1] LEES	16A	BABR	$\gamma\gamma \to \eta_c(1S) \to K\overline{K}\pi$
	seen		LEES	14E	BABR	Dalitz anal. of $\eta_c \to K^+ K^- \eta/\pi^0$

YOUR NOTE [1] From a Dalitz plot analysis using an isobar model.

NODE=M026R49;LINKAGE=A

$\eta_c(1S)$ REFERENCES

NODE=M026

YOUR PAPER LEES 16A PR D93 012005 J.P. Lees *et al.* (BABAR Collab.) REFID=57125

LEES 14E PR D89 112004 J.P. Lees *et al.* (BABAR Collab.) REFID=55937