$\eta_c(2S)$

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

OMITTED FROM SUMMARY TABLE

Needs confirmation. Quantum numbers are quark model predictions.

$\eta_c(2S)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
3654± 6±8	39 ± 11	CHOI	02	BELL	$B \to K K_S K^- \pi^+$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
3622±12	42	[1] ABE,K	02	BELL	10.6 $e^+ e^- \to J/\psi + X$
3594± 5		[2] EDWARDS	82C	CBAL	$e^+ e^- \to \gamma X$

[1] From a fit of the J/ψ recoil mass spectrum. Systematic errors not estimated.
[2] Assuming mass of $\psi(2S)$ = 3686 MeV.

$\eta_c(2S)$ WIDTH

VALUE (MeV)	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<55	90	39 ± 11	[3] CHOI	02	BELL	$B \to K K_S K^- \pi^+$
< 8.0	95		[4] EDWARDS	82C	CBAL	$e^+ e^- \to \gamma X$

[3] For a mass value of 3654 ± 6 MeV
[4] For a mass value of 3594 ± 5 MeV

$\eta_c(2S)$ DECAY MODES

	Mode
Γ_1	hadrons
Γ_2	$K \overline{K} \pi$
Γ_3	$p \overline{p}$
Γ_4	$\gamma\gamma$

$\eta_c(2S)$ $\Gamma(i)\Gamma(\gamma\gamma)/\Gamma^2(\text{total})$

$\Gamma(p\overline{p}) \times \Gamma(\gamma\gamma)/\Gamma^2_{\text{total}}$ $\Gamma_3\Gamma_4/\Gamma^2$

VALUE (units 10^{-8})	CL%	DOCUMENT ID		TECN	COMMENT
< 5.6	90	[5,6,7] AMBROGIANI	01	E835	$\overline{p} p \to \gamma\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 8.0	90	[5,6,8] AMBROGIANI	01	E835	$\overline{p} p \to \gamma\gamma$
<12.0	90	[6,8] AMBROGIANI	01	E835	$\overline{p} p \to \gamma\gamma$

[5] Including the measurements of of ARMSTRONG 95F in the AMBROGIANI 01 analysis.
[6] For a total width Γ=5 MeV.
[7] For the resonance mass region 3589–3599 MeV/c^2.
[8] For the resonance mass region 3575–3660 MeV/c^2.

$\eta_c(2S)$ BRANCHING RATIOS

$\Gamma(\text{hadrons})/\Gamma_{\text{total}}$ — Γ_1/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
not seen	ABREU	98O	DLPH	$e^+e^- \to e^+e^-$ +hadrons
seen	[9] EDWARDS	82C	CBAL	$e^+e^- \to \gamma X$

$\Gamma(K\overline{K}\pi)/\Gamma_{\text{total}}$ — Γ_2/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
seen	39 ± 11	[10] CHOI	02	BELL	$B \to K K_S K^- \pi^+$

$\Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ — Γ_4/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.01	90	LEE	85	CBAL	$\psi' \to$ photons

[9] For a mass value of 3594 ± 5 MeV
[10] For a mass value of 3654 ± 6 MeV

$\eta_c(2S)$ REFERENCES

ABE,K	02	PRL 89 142001	K. Abe *et al.*	(BELLE Collab.)
CHOI	02	PRL 89 102001	S.-K. Choi *et al.*	(BELLE Collab.)
AMBROGIANI	01	PR D64 052003	M. Ambrogiani *et al.*	(FNAL E835 Collab.)
ABREU	98O	PL B441 479	P. Abreu *et al.*	(DELPHI Collab.)
ARMSTRONG	95F	PR D52 4839	T.A. Armstrong *et al.*	(FNAL, FERR, GENO+)
LEE	85	SLAC 282	R.A. Lee	(SLAC)
EDWARDS	82C	PRL 48 70	C. Edwards *et al.*	(CIT, HARV, PRIN+)

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