$h_c(1P)$

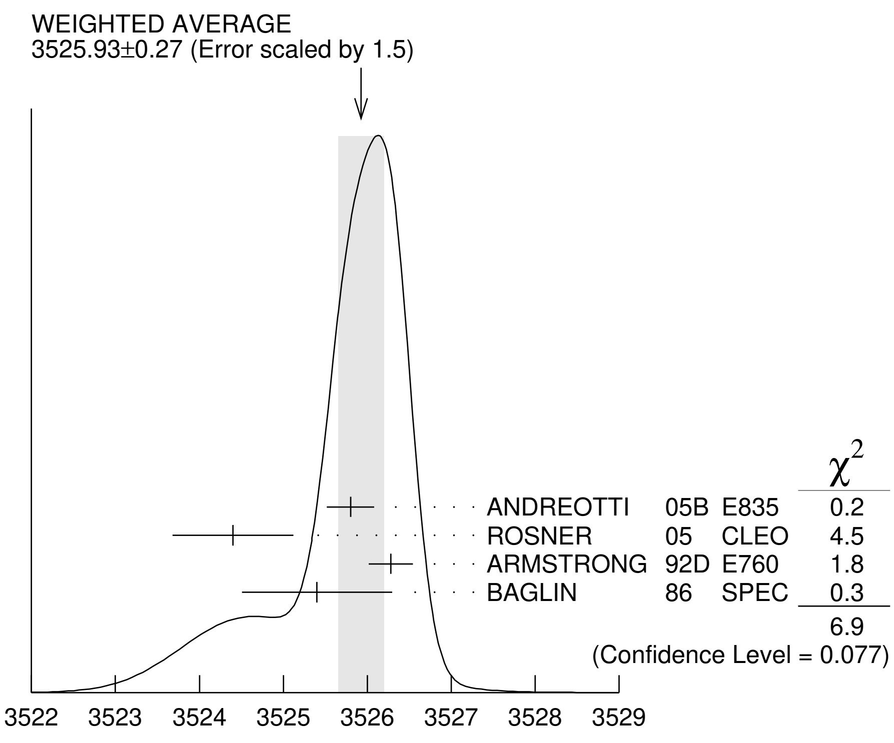
$I^G(J^{PC}) = ?^?(?^{??})$

OMITTED FROM SUMMARY TABLE
Needs confirmation.

$h_c(1P)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
3525.93±0.27 OUR AVERAGE Error includes scale factor of 1.5. See the ideogram below.				
3525.8 ±0.2 ±0.2	13	ANDREOTTI 05B	E835	$\overline{p}p \to \eta_c \gamma$
3524.4 ±0.6 ±0.4	168 ± 40	ROSNER 05	CLEO	$\psi(2S) \to \pi^0 \eta_c \gamma$
3526.28±0.18±0.19	59	[1] ARMSTRONG 92D	E760	$\overline{p}p \to J/\psi \pi^0$
3525.4 ±0.8 ±0.4	5	BAGLIN 86	SPEC	$\overline{p}p \to J/\psi X$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
3527 ±8	42	ANTONIAZZI 94	E705	300 $\pi^{\pm}$, pLi $\to J/\psi \pi^0 X$

[1] Mass central value and systematic error recalculated by us according to Eq. (16) in ARMSTRONG 93B, using the value for the $\psi(2S)$ mass from AULCHENKO 03.



$h_c(1P)$ MASS (MeV)

$h_c(1P)$ WIDTH

VALUE (MeV)	*CL%*	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
<1		13	ANDREOTTI	05B	E835	$\overline{p}p \to \eta_c\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<1.1	90	59	ARMSTRONG	92D	E760	$\overline{p}p \to J/\psi\pi^0$

$h_c(1P)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$J/\psi(1S)\pi^0$	
Γ_2	$J/\psi(1S)\pi\pi$	not seen
Γ_3	$p\overline{p}$	
Γ_4	$\eta_c\gamma$	seen

$h_c(1P)$ PARTIAL WIDTHS

$h_c(1P)$ $\Gamma(i)\Gamma(\overline{p}p)/\Gamma(\text{total})$

$\Gamma(\eta_c\gamma) \times \Gamma(p\overline{p})/\Gamma_{\text{total}}$ — $\Gamma_4\Gamma_3/\Gamma$

VALUE (eV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •					
12.0±4.5	13	[2] ANDREOTTI	05B	E835	$\overline{p}p \to \eta_c\gamma$

[2] Assuming $\Gamma = 1$ MeV.

$h_c(1P)$ BRANCHING RATIOS

$\Gamma(J/\psi(1S)\pi\pi)/\Gamma(J/\psi(1S)\pi^0)$ — Γ_2/Γ_1

VALUE	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
<0.18	90	ARMSTRONG	92D	E760	$\overline{p}p \to J/\psi\pi^0$

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

VALUE	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
seen	168 ± 40	[3] ROSNER	05	CLEO	$\psi(2S) \to \pi^0\eta_c\gamma$

[3] CLEO measures the product $B(\psi(2S) \to \pi^0 h_c) \times B(h_c \to \eta_c\gamma)$ to be $(4.0 \pm 0.8 \pm 0.7) \times 10^{-4}$.

$h_c(1P)$ REFERENCES

ANDREOTTI	05B	PR D72 032001	M. Andreotti *et al.*	(FNAL E835 Collab.)
ROSNER	05	PRL 95 102003	J.L. Rosner *et al.*	(CLEO Collab.)
AULCHENKO	03	PL B573 63	V.M. Aulchenko *et al.*	(KEDR Collab.)
ANTONIAZZI	94	PR D50 4258	L. Antoniazzi *et al.*	(E705 Collab.)
ARMSTRONG	93B	PR D47 772	T.A. Armstrong *et al.*	(FNAL E760 Collab.)
ARMSTRONG	92D	PRL 69 2337	T.A. Armstrong *et al.*	(FNAL, FERR, GENO+)
BAGLIN	86	PL B171 135	C. Baglin *et al.*	(LAPP, CERN, TORI, STRB+)

OTHER RELATED PAPERS

AUBERT	05R	PR D71 071103R	B. Aubert *et al.*	(BABAR Collab.)
RUBIN	05	PR D72 092004	P. Rubin *et al.*	(CLEO Collab.)
EICHTEN	02	PRL 89 162002	E.J. Eichten, K. Lane, C. Quigg	