overlooked by some authors as pointed out by ALEXANDER 89, BARU 86, COOPER 86, KOENIGSMANN 86, and others.

The Listings give experimental results on B_{ee}, $B_{\mu\mu}$, $B_{\tau\tau}$, and $\Gamma_{ee}\Gamma_{\rm had}/\Gamma$. The entries of the latter quantity have been re-evaluated using consistently the correction procedure of KURAEV 85. The partial width Γ_{ee} is obtained from the average values for $\Gamma_{ee}\Gamma_{\rm had}/\Gamma$ and $B_{\ell\ell}$ using

$$\Gamma_{ee} = \frac{\Gamma_{ee}\Gamma_{\rm had}}{\Gamma(1-3B_{\ell\ell})} \ . \qquad (5)$$

The total width Γ is then obtained from Eq. (1). We do not list Γ_{ee} and Γ values of individual experiments. The Γ_{ee} values in the Meson Summary Table are also those defined in Eq. (1) and no longer the lowest order quantities $\Gamma^{(0)}_{ee}$.

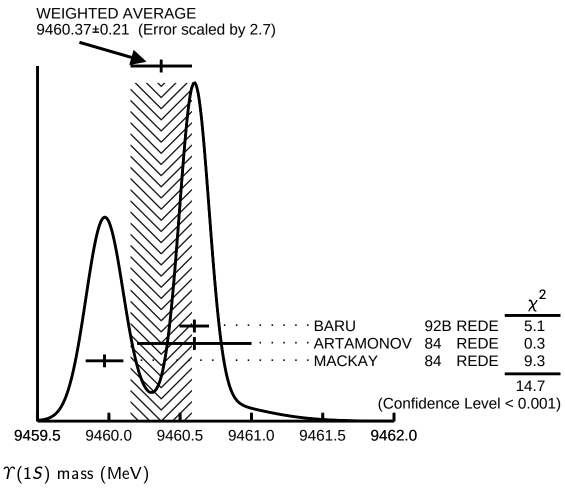
$\Upsilon(1S)$ or $\Upsilon(9460)$

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

$\Upsilon(1S)$ MASS

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
9460.37±0.21 OUR AVERAGE	Error includes scale factor of 2.7. See the ideogram below.			
9460.60±0.09±0.05	[1] BARU	92B	REDE	$e^+e^- \rightarrow$ hadrons
9460.6 ±0.4	[2] ARTAMONOV	84	REDE	$e^+e^- \rightarrow$ hadrons
9459.97±0.11±0.07	MACKAY	84	REDE	$e^+e^- \rightarrow$ hadrons
• • • We do not use the following data for averages, fits, limits, etc. • • •				
9460.59±0.12	BARU	86	REDE	$e^+e^- \rightarrow$ hadrons

[1] Superseding BARU 86.
[2] Value includes data of ARTAMONOV 82.



$\Upsilon(1S)$ mass (MeV)

$\Upsilon(1S)$ WIDTH

VALUE (keV)	*DOCUMENT ID*
52.5±1.8 OUR EVALUATION	See Υ mini-review.

$\Upsilon(1S)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)	Scale factor/ Confidence level
Γ_1	$\tau^+\tau^-$	(2.97±0.35) %	
Γ_2	e^+e^-	(2.52±0.17) %	
Γ_3	$\mu^+\mu^-$	(2.48±0.07) %	S=1.1
	Hadronic decays		
Γ_4	$J/\psi(1S)$ anything	(1.1 ±0.4) $\times 10^{-3}$	
Γ_5	$\rho\pi$	< 2 $\times 10^{-4}$	CL=90%
Γ_6	$\pi^+\pi^-$	< 5 $\times 10^{-4}$	CL=90%
Γ_7	K^+K^-	< 5 $\times 10^{-4}$	CL=90%
Γ_8	$p\overline{p}$	< 9 $\times 10^{-4}$	CL=90%
	Radiative decays		
Γ_9	$\gamma 2h^+2h^-$	(7.0 ±1.5) $\times 10^{-4}$	
Γ_{10}	$\gamma 3h^+3h^-$	(5.4 ±2.0) $\times 10^{-4}$	
Γ_{11}	$\gamma 4h^+4h^-$	(7.4 ±3.5) $\times 10^{-4}$	
Γ_{12}	$\gamma\pi^+\pi^-K^+K^-$	(2.9 ±0.9) $\times 10^{-4}$	
Γ_{13}	$\gamma 2\pi^+2\pi^-$	(2.5 ±0.9) $\times 10^{-4}$	
Γ_{14}	$\gamma 3\pi^+3\pi^-$	(2.5 ±1.2) $\times 10^{-4}$	
Γ_{15}	$\gamma 2\pi^+2\pi^-K^+K^-$	(2.4 ±1.2) $\times 10^{-4}$	
Γ_{16}	$\gamma\pi^+\pi^-p\overline{p}$	(1.5 ±0.6) $\times 10^{-4}$	
Γ_{17}	$\gamma 2\pi^+2\pi^-p\overline{p}$	(4 ±6) $\times 10^{-5}$	
Γ_{18}	$\gamma 2K^+2K^-$	(2.0 ±2.0) $\times 10^{-5}$	
Γ_{19}	$\gamma\eta'(958)$	< 1.3 $\times 10^{-3}$	CL=90%
Γ_{20}	$\gamma\eta$	< 3.5 $\times 10^{-4}$	CL=90%
Γ_{21}	$\gamma f'_2(1525)$	< 1.4 $\times 10^{-4}$	CL=90%
Γ_{22}	$\gamma f_2(1270)$	< 1.3 $\times 10^{-4}$	CL=90%
Γ_{23}	$\gamma\eta(1440)$	< 8.2 $\times 10^{-5}$	CL=90%
Γ_{24}	$\gamma f_J(1710) \rightarrow \gamma K\overline{K}$	< 2.6 $\times 10^{-4}$	CL=90%
Γ_{25}	$\gamma f_4(2220) \rightarrow \gamma K^+K^-$	< 1.5 $\times 10^{-5}$	CL=90%
	Hadronic decays		
Γ_{26}	$D^*(2010)^\pm$ anything	[a]	

[a] The value is for the sum of the charge states indicated.

$\Upsilon(1S)$ $\Gamma(i)\Gamma(e^+e^-)/\Gamma(\text{total})$

$\Gamma(e^+e^-) \times \Gamma(\mu^+\mu^-)/\Gamma_{\rm total}$ — $\Gamma_2\Gamma_3/\Gamma$

VALUE (eV)	*DOCUMENT ID*		*TECN*	*COMMENT*
31.2±1.6±1.7	KOBEL	92	CBAL	$e^+e^- \rightarrow \mu^+\mu^-$

$\Gamma(\text{hadrons}) \times \Gamma(e^+e^-)/\Gamma_{\rm total}$ — $\Gamma_0\Gamma_2/\Gamma$

VALUE (keV)	*DOCUMENT ID*		*TECN*	*COMMENT*
1.216±0.027 OUR AVERAGE				
1.187±0.023±0.031	[3] BARU	92B	MD1	$e^+e^- \rightarrow$ hadrons
1.23 ±0.02 ±0.05	[3] JAKUBOWSKI	88	CBAL	$e^+e^- \rightarrow$ hadrons
1.37 ±0.06 ±0.09	[4] GILES	84B	CLEO	$e^+e^- \rightarrow$ hadrons
1.23 ±0.08 ±0.04	[4] ALBRECHT	82	DASP	$e^+e^- \rightarrow$ hadrons
1.13 ±0.07 ±0.11	[4] NICZYPORUK	82	LENA	$e^+e^- \rightarrow$ hadrons
1.09 ±0.25	[4] BOCK	80	CNTR	$e^+e^- \rightarrow$ hadrons
1.35 ±0.14	[5] BERGER	79	PLUT	$e^+e^- \rightarrow$ hadrons
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.17 ±0.06 ±0.10	[4] TUTS	83	CUSB	$e^+e^- \rightarrow$ hadrons

[3] Radiative corrections evaluated following KURAEV 85.
[4] Radiative corrections reevaluated by BUCHMUELLER 88 following KURAEV 85.
[5] Radiative corrections reevaluated by ALEXANDER 89 using B($\mu\mu$) = 0.026.

$\Upsilon(1S)$ PARTIAL WIDTHS

$\Gamma(e^+e^-)$ — Γ_2

VALUE (keV)	*DOCUMENT ID*
1.32±0.03 OUR EVALUATION	See Υ mini-review.

$\Upsilon(1S)$ BRANCHING RATIOS

$\Gamma(\tau^+\tau^-)/\Gamma_{\rm total}$ — Γ_1/Γ

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
0.0297±0.0035 OUR AVERAGE				
0.027 ±0.004 ±0.002	[6] ALBRECHT	85C	ARG	$\Upsilon(2S) \rightarrow \pi^+\pi^-\tau^+\tau^-$
0.034 ±0.004 ±0.004	GILES	83	CLEO	$e^+e^- \rightarrow \tau^+\tau^-$

[6] Using B($\Upsilon(1S) \rightarrow ee$) = B($\Upsilon(1S) \rightarrow \mu\mu$) = 0.0256; not used for width evaluations.

$\Gamma(\mu^+\mu^-)/\Gamma_{\rm total}$ — Γ_3/Γ

VALUE	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
0.0248±0.0007 OUR AVERAGE	Error includes scale factor of 1.1.				
0.0212±0.0020±0.0010		[7] BARU	92	MD1	$e^+e^- \rightarrow \mu^+\mu^-$
0.0231±0.0012±0.0010		[7] KOBEL	92	CBAL	$e^+e^- \rightarrow \mu^+\mu^-$
0.0252±0.0007±0.0007		CHEN	89B	CLEO	$e^+e^- \rightarrow \mu^+\mu^-$
0.0261±0.0009±0.0011		KAARSBERG	89	CSB2	$e^+e^- \rightarrow \mu^+\mu^-$
0.0230±0.0025±0.0013	86	ALBRECHT	87	ARG	$\Upsilon(2S) \rightarrow \pi^+\pi^-\mu^+\mu^-$
0.029 ±0.003 ±0.002	864	BESSON	84	CLEO	$\Upsilon(2S) \rightarrow \pi^+\pi^-\mu^+\mu^-$