$$\Upsilon(10753)$$

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

OMITTED FROM SUMMARY TABLE

A candidate for $\Upsilon(3D)$ state or an exotic structure.

Seen by MIZUK 19 in $e^+e^- \rightarrow \Upsilon(nS)\pi^+\pi^-$ (n=1,2,3) with a significance of 5.2 σ .

Υ(10753) MASS

VALUE (MeV)	DOCUMENT	ID	TECN	COMMENT		
10752.7 \pm 5.9 $^{+0.7}_{-1.1}$	¹ MIZUK	19	BELL	$e^+e^- ightarrow$	$\Upsilon(nS)\pi^+\pi^-$	
ullet $ullet$ We do not use the following data for averages, fits, limits, etc. $ullet$ $ullet$						
10761 ±2	² DONG	20A		$e^+e^- \rightarrow$	b b	

¹ From a simultaneous fit to the $\Upsilon(nS)\pi^+\pi^-$, n = 1, 2, 3, cross sections at 28 energy points within $\sqrt{s} = 10.63-11.02$ GeV, including the initial-state radiation at $\Upsilon(10860)$.

² From a fit to the dressed cross sections of AUBERT 09E by BaBar and SANTEL 16 by Belle above 10.68 GeV with a coherent sum of a continuum amplitude and three Breit-Wigner functions with constant widths.

Υ(10753) WIDTH

VALUE (MeV)	(MeV) DOCUMENT ID		TECN	COMMENT	
$35.5^{+17.6}_{-11.3}_{-3.3}$	¹ MIZUK	19	BELL	$e^+e^- ightarrow$	$\Upsilon({\sf nS})\pi^+\pi^-$
$\bullet \bullet \bullet$ We do not use the following	owing data for ave	rages, fits	s, limits,	etc. • • •	
48.5± 3.0	² DONG	20A		$e^+e^- \rightarrow$	b b
1 From a simultaneous fit t	o the $\Upsilon(nS)\pi^+\pi^-$	- n - ·	1 2 3	cross section	s at 28 energ

¹ From a simultaneous fit to the $\Upsilon(nS)\pi^{+}\pi^{-}$, n = 1, 2, 3, cross sections at 28 energy points within $\sqrt{s} = 10.63-11.02$ GeV, including the initial-state radiation at $\Upsilon(10860)$.

² From a fit to the dressed cross sections of AUBERT 09E by BaBar and SANTEL 16 by Belle above 10.68 GeV with a coherent sum of a continuum amplitude and three Breit-Wigner functions with constant widths.

Υ (10753) DECAY MODES

	Mode
Г1	$\Upsilon(1S)\pi^+\pi^-$
Г2	$\Upsilon(2S)\pi^+\pi^-$
Γ ₃	$\Upsilon(3S)\pi^+\pi^-$
Г4	$\omega \chi_{b1}(1P)$
Γ ₅	$\omega \chi_{b2}(1P)$
Г ₆	e ⁺ e ⁻

$\Upsilon(10753) \Gamma(i)\Gamma(e^+e^-)/\Gamma(total)$

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$\Gamma(\Upsilon(1S)\pi^+\pi^-)$	$\times \Gamma(e^+e^-)/\Gamma_{total}$		Γ ₁ Γ ₆ /Γ
VALUE (eV)	DOCUMENT ID	TECN	COMMENT
• • We do not use	the following data for averages	, fits, limits, e	etc. ● ● ●
0.295 ± 0.175	^{1,2} MIZUK	19 BELL	$e^+e^- \rightarrow \Upsilon(nS)\pi^+\pi^-$
¹ From a simultane points within \sqrt{s} ² Reported as the r within a model co	ous fit to the Υ (nS) $\pi^+\pi^-$, n = 10.63–11.02 GeV, including ange 0.12–0.47 eV obtained fro omposed as a sum of Breit-Wig	= 1, 2, 3, cr the initial-stat m multiple sol ner functions.	oss sections at 28 energy te radiation at $\Upsilon(10860)$ utions of an amplitude fit
$\Gamma(\Upsilon(2S)\pi^+\pi^-)$	× $\Gamma(e^+e^-)/\Gamma_{\text{total}}$	TECN	Γ ₂ Γ ₆ /Γ
• • We do not use	the following data for average	fits limits e	
875 ± 0.345	1,2 MIZLIK	9 RELL	$r_{e}^{+}e^{-} \rightarrow r(nS)\pi^{+}\pi^{-}$
points within \sqrt{s} ² Reported as the r within a model co	= 10.63-11.02 GeV, including ange 0.53-1.22 eV obtained fro omposed as a sum of Breit-Wig	the initial-stat m multiple sol ner functions.	te radiation at $\Upsilon(10860)$ utions of an amplitude fit
$T(\Upsilon(3S)\pi^+\pi^-)$	× $\Gamma(e^+e^-)/\Gamma_{\text{total}}$	TECN	Г₃Г₆/Г соммент
• • We do not use	the following data for averages	, fits, limits, e	etc. • • •
.235±0.025	^{1,2} MIZUK	19 BELL	$e^+e^- \rightarrow \Upsilon(nS)\pi^+\pi^-$
¹ From a simultane points within \sqrt{s} ² Reported as the r within a model co	ous fit to the $\Upsilon(nS)\pi^+\pi^-$, $n = 10.63$ –11.02 GeV, including ange 0.21–0.26 eV obtained fro omposed as a sum of Breit-Wig	= 1, 2, 3, cr the initial-stat m multiple sol ner functions.	oss sections at 28 energy te radiation at $\Upsilon(10860)$ utions of an amplitude fit
$(\omega \chi_{b1}(1P)) \times 1$	$(e^+e^-)/\Gamma_{total}$		Γ₄Γ ₆ /Γ
ALUE (eV)	L% DOCUMENT ID	TECN COM	MENT
.63±0.39±0.20 6	8 ¹ ADACHI 23	BELL e ⁺ e	$^{-} \rightarrow \pi^{+}\pi^{-}\pi^{0}\gamma \Upsilon(1S)$
¹ A fit solution wit structive interfere	h constructive interference. T nce gives a value of 2.01 \pm 0.3	he other solut 8 ± 0.76 eV.	ion corresponding to de-
$(\omega \chi_{b2}(1P)) \times $	-(e+e⁻)/Γ_{total} L% DOCUMENT ID	TECN COMI	Г₅Г₆/Г
$0.53 \pm 0.46 \pm 0.15$ 6	8 ¹ ADACHI 23	$\frac{1}{1} = \frac{1}{1} = \frac{1}$	$- \rightarrow \pi^+ \pi^- \pi^0 \gamma \gamma (1S)$
1 A fit solution wit	h constructive interference. T	ne other solut	ion corresponding to de-

Υ (10753) REFERENCES

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