

X(10650)[±]

$$I^G(J^P) = ?^+(1^+)$$

OMITTED FROM SUMMARY TABLE

Observed by BONDAR 12 in $\Upsilon(5S)$ decays to $\Upsilon(nS)\pi^+\pi^-$ ($n = 1, 2, 3$) and $h_b(mP)\pi^+\pi^-$ ($m = 1, 2$). $J^P = 1^+$ is favored from angular analyses.

X(10650)[±] MASS

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
10652.2±1.5	¹ BONDAR	12	BELL $e^+e^- \rightarrow$ hadrons
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
10657 ±6 ±3	² BONDAR	12	BELL $e^+e^- \rightarrow \Upsilon(1S)\pi^+\pi^-$
10651 ±2 ±3	² BONDAR	12	BELL $e^+e^- \rightarrow \Upsilon(2S)\pi^+\pi^-$
10652 ±1 ±2	² BONDAR	12	BELL $e^+e^- \rightarrow \Upsilon(3S)\pi^+\pi^-$
10654 ±3 $\begin{smallmatrix} +1 \\ -2 \end{smallmatrix}$	² BONDAR	12	BELL $e^+e^- \rightarrow h_b(1P)\pi^+\pi^-$
10651 $\begin{smallmatrix} +2 \\ -3 \end{smallmatrix}$ $\begin{smallmatrix} +3 \\ -2 \end{smallmatrix}$	² BONDAR	12	BELL $e^+e^- \rightarrow h_b(2P)\pi^+\pi^-$

¹ Average of the BONDAR 12 measurements in separate channels.

² Superseded by the average measurement of BONDAR 12.

X(10650)[±] WIDTH

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
11.5±2.2	³ BONDAR	12	BELL $e^+e^- \rightarrow$ hadrons
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
16.3±9.8 $\begin{smallmatrix} +6.0 \\ -2.0 \end{smallmatrix}$	⁴ BONDAR	12	BELL $e^+e^- \rightarrow \Upsilon(1S)\pi^+\pi^-$
13.3±3.3 $\begin{smallmatrix} +4.0 \\ -3.0 \end{smallmatrix}$	⁴ BONDAR	12	BELL $e^+e^- \rightarrow \Upsilon(2S)\pi^+\pi^-$
8.4±2.0±2.0	⁴ BONDAR	12	BELL $e^+e^- \rightarrow \Upsilon(3S)\pi^+\pi^-$
20.9 $\begin{smallmatrix} +5.4+2.1 \\ -4.7-5.7 \end{smallmatrix}$	⁴ BONDAR	12	BELL $e^+e^- \rightarrow h_b(1P)\pi^+\pi^-$
19 ±7 $\begin{smallmatrix} +11 \\ -7 \end{smallmatrix}$	⁴ BONDAR	12	BELL $e^+e^- \rightarrow h_b(2P)\pi^+\pi^-$

³ Average of the BONDAR 12 measurements in separate channels.

⁴ Superseded by the average measurement of BONDAR 12.

X(10650)⁺ DECAY MODES

X(10650)⁻ decay modes are charge conjugates of the modes below.

Mode	Fraction (Γ_i/Γ)
Γ_1 $\Upsilon(1S)\pi^+$	seen
Γ_2 $\Upsilon(2S)\pi^+$	seen

Γ_3	$\Upsilon(3S)\pi^+$	seen
Γ_4	$h_b(1P)\pi^+$	seen
Γ_5	$h_b(2P)\pi^+$	seen

$X(10650)^\pm$ BRANCHING RATIOS

$\Gamma(\Upsilon(1S)\pi^+)/\Gamma_{\text{total}}$				Γ_1/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
seen	BONDAR	12	BELL	$e^+e^- \rightarrow \Upsilon(1S)\pi^+\pi^-$
$\Gamma(\Upsilon(2S)\pi^+)/\Gamma_{\text{total}}$				Γ_2/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
seen	BONDAR	12	BELL	$e^+e^- \rightarrow \Upsilon(2S)\pi^+\pi^-$
$\Gamma(\Upsilon(3S)\pi^+)/\Gamma_{\text{total}}$				Γ_3/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
seen	BONDAR	12	BELL	$e^+e^- \rightarrow \Upsilon(3S)\pi^+\pi^-$
$\Gamma(h_b(1P)\pi^+)/\Gamma_{\text{total}}$				Γ_4/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
seen	BONDAR	12	BELL	$e^+e^- \rightarrow h_b(1P)\pi^+\pi^-$
$\Gamma(h_b(2P)\pi^+)/\Gamma_{\text{total}}$				Γ_5/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
seen	BONDAR	12	BELL	$e^+e^- \rightarrow h_b(2P)\pi^+\pi^-$

$X(10650)^\pm$ REFERENCES

BONDAR 12 PRL 108 122001 A. Bondar *et al.* (BELLE Collab.)
