

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 ± 1 -2	² BONDAR	12	BELL $e^+e^- \rightarrow h_b(1P)\pi^+\pi^-$
10651 ± 2 ± 3 -3 -2	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¹ Average of the BONDAR 12 measurements in separate channels.² Superseded by the average measurement of BONDAR 12.**X(10650)[±] WIDTH**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 ⁺ 6.0 - 2.0	⁴ BONDAR	12	BELL $e^+e^- \rightarrow \Upsilon(1S)\pi^+\pi^-$
13.3 ± 3.3 ⁺ 4.0 - 3.0	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 ⁺ 5.4 ⁺ 2.1 - 4.7 - 5.7	⁴ BONDAR	12	BELL $e^+e^- \rightarrow h_b(1P)\pi^+\pi^-$
19 ± 7 ± 11 - 7	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³ Average of the BONDAR 12 measurements in separate channels.⁴ Superseded by the average measurement of BONDAR 12.**X(10650)⁺ DECAY MODES**X(10650)⁻ decay modes are charge conjugates of the modes below.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	$e^+e^- \rightarrow \Upsilon(1S)\pi^+\pi^-$
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$\Gamma(\Upsilon(2S)\pi^+)/\Gamma_{\text{total}}$				Γ_2/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
seen	BONDAR	12	BELL	$e^+e^- \rightarrow \Upsilon(2S)\pi^+\pi^-$
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$\Gamma(\Upsilon(3S)\pi^+)/\Gamma_{\text{total}}$				Γ_3/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
seen	BONDAR	12	BELL	$e^+e^- \rightarrow \Upsilon(3S)\pi^+\pi^-$
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$\Gamma(h_b(1P)\pi^+)/\Gamma_{\text{total}}$				Γ_4/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
seen	BONDAR	12	BELL	$e^+e^- \rightarrow h_b(1P)\pi^+\pi^-$
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$\Gamma(h_b(2P)\pi^+)/\Gamma_{\text{total}}$				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.)