

$B_J(5970)^0$

$$I(J^P) = \frac{1}{2}(??)$$

I, J, P need confirmation.

Quantum numbers shown are quark-model predictions.

 $B_J(5970)^0$ MASSOUR FIT uses m_{B^+} and $m_{B_J(5970)^0} - m_{B^+}$ to determine $m_{B_J(5970)^0}$.

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>
5971±5 OUR FIT	

 $m_{B_J(5970)^0} - m_{B^+}$

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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691 ±5 OUR FIT**691 ±5 OUR AVERAGE**

689.9±2.9± 5.1	10K	¹ AAIJ	15AB LHCB	pp at 7, 8 TeV
698 ±5 ±12	2.6k	² AALTONEN	14I	CDF $p\bar{p}$ at 1.96 TeV

• • • We do not use the following data for averages, fits, limits, etc. • • •

714.3±6.4± 5.1	10K	³ AAIJ	15AB LHCB	pp at 7, 8 TeV
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¹ AAIJ 15AB reports $[m_{B_J^0} - m_{B^+}] - m_{\pi^-} = 550.4 \pm 2.9 \pm 5.1$ MeV which we adjust by the π^- mass. The masses inside the square brackets were measured for each candidate event. The result assumes $P = (-1)^J$ and uses two relativistic Breit-Wigner functions in the fit for mass difference.

² AALTONEN 14I reports $m_{B_J(5970)^0} - m_{B^+} - m_{\pi^-} = 558 \pm 5 \pm 12$ MeV which we adjusted by the π^- mass.

³ AAIJ 15AB reports $[m_{B_J^0} - m_{B^+}] - m_{\pi^-} = 575 \pm 6 \pm 5$ MeV which we adjust by the π^- mass. The masses inside the square brackets were measured for each candidate event. The result assumes $P = (-1)^J$ and uses three relativistic Breit-Wigner functions in the fit for mass difference.

 $m_{B_J(5970)^0} - m_{B^{*+}}$

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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• • • We do not use the following data for averages, fits, limits, etc. • • •

691.6±3.7±5.1	10k	¹ AAIJ	15AB LHCB	pp at 7, 8 TeV
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¹ AAIJ 15AB reports $[m_{B_J^0} - m_{B^+}] - (m_{B^{*+}} - m_{B^+}) - m_{\pi^-} = 552 \pm 4 \pm 5$ MeV which we adjust by the π^- mass. The masses inside the square brackets were measured for each candidate event. The result assumes $P = -(-1)^J$, $(m_{B^{*+}} - m_{B^+}) = 45.01 \pm 0.30 \pm 0.23$ MeV, and uses three relativistic Breit-Wigner functions in the fit for mass difference.

$B_J(5970)^0$ WIDTH

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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81 ± 12 OUR AVERAGE

82 ± 8 ± 9	10K	¹ AAIJ	15AB LHCB	$p p$ at 7, 8 TeV
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70 ⁺³⁰ ₋₂₀ ± 30	2.6k	AALTONEN	14i CDF	$p \bar{p}$ at 1.96 TeV
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• • • We do not use the following data for averages, fits, limits, etc. • • •

56 ± 7 ± 9	10K	² AAIJ	15AB LHCB	$p p$ at 7, 8 TeV
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82 ± 10 ± 9	10K	³ AAIJ	15AB LHCB	$p p$ at 7, 8 TeV
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¹ Assuming $P = (-1)^J$ and using two relativistic Breit-Wigner functions in the fit for mass difference.

² Assuming $P = (-1)^J$ and using three relativistic Breit-Wigner functions in the fit for mass difference.

³ Assuming $P = -(-1)^J$ and using three relativistic Breit-Wigner functions in the fit for mass difference.

 $B_J(5970)^0$ DECAY MODES

Mode	Fraction (Γ_i/Γ)
Γ_1 $B^+ \pi^-$	possibly seen
Γ_2 $B^{*+} \pi^-$	seen

 $B_J(5970)^0$ BRANCHING RATIOS

$\Gamma(B^+ \pi^-)/\Gamma_{\text{total}}$	Γ_1/Γ
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<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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possibly seen	10K	¹ AAIJ	15AB LHCB	$p p$ at 7, 8 TeV
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possibly seen	2.6k	AALTONEN	14i CDF	$p \bar{p}$ at 1.96 TeV
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¹ A $B\pi$ decay is forbidden from a $P = -(-1)^J$ parent, whereas $B^* \pi$ is allowed.

$\Gamma(B^{*+} \pi^-)/\Gamma_{\text{total}}$	Γ_2/Γ
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<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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seen	10K	AAIJ	15AB LHCB	$p p$ at 7, 8 TeV
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seen	2.6k	AALTONEN	14i CDF	$p \bar{p}$ at 1.96 TeV
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 $B_J(5970)^0$ REFERENCES

AAIJ	15AB JHEP 1504 024	R. Aaij <i>et al.</i>	(LHCb Collab.)
AALTONEN	14i PR D90 012013	T. Aaltonen <i>et al.</i>	(CDF Collab.)