

$B_J(5840)^0$
 $I(J^P) = \frac{1}{2}(??)$ Status: **
 I, J, P need confirmation.

OMITTED FROM SUMMARY TABLE

Quantum numbers shown are quark-model predictions.

 $B_J(5840)^0$ MASSOUR FIT uses m_{B^+} and $m_{B_J(5840)^0} - m_{B^+}$ to determine $m_{B_J(5840)^0}$.VALUE (MeV)DOCUMENT ID**5863 ± 9 OUR FIT** **$m_{B_J(5840)^0} - m_{B^+}$** VALUE (MeV)EVTSDOCUMENT IDTECNCOMMENT**584 ± 9 OUR FIT****584 ± 5 ± 7**

12k

¹

AAIJ

15AB

LHCB

 pp at 7, 8 TeV

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

610 ± 22 ± 7

12k

²

AAIJ

15AB

LHCB

 pp at 7, 8 TeV¹ AAIJ 15AB reports $[m_{B_J^0} - m_{B^+}] - m_{\pi^-} = 444 \pm 5 \pm 7$ MeV which we adjust bythe 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 AAIJ 15AB reports $[m_{B_J^0} - m_{B^+}] - m_{\pi^-} = 471 \pm 22 \pm 7$ MeV which we adjust bythe 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. **$m_{B_J(5840)^0} - m_{B^{*+}}$** VALUE (MeV)EVTSDOCUMENT IDTECNCOMMENT

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

584 ± 5 ± 7

12k

³

AAIJ

15AB

LHCB

 pp at 7, 8 TeV³ AAIJ 15AB reports $[m_{B_J^0} - m_{B^+}] - (m_{B^{*+}} - m_{B^+}) - m_{\pi^-} = 444 \pm 5 \pm 7$ MeVwhich 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. **$B_J(5840)^0$ WIDTH**VALUE (MeV)EVTSDOCUMENT IDTECNCOMMENT**127 ± 17 ± 34**

12k

⁴

AAIJ

15AB

LHCB

 pp at 7, 8 TeV

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

107 ± 20 ± 34

12k

⁵

AAIJ

15AB

LHCB

 pp at 7, 8 TeV

119 ± 17 ± 34

12k

⁶

AAIJ

15AB

LHCB

 pp at 7, 8 TeV

⁴ Assuming $P = (-1)^J$ and using two relativistic Breit-Wigner functions in the fit for mass difference.

⁵ Assuming $P = (-1)^J$ and using three relativistic Breit-Wigner functions in the fit for mass difference.

⁶ Assuming $P = -(-1)^J$ and using three relativistic Breit-Wigner functions in the fit for mass difference.

$B_J(5840)^0$ DECAY MODES

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

$B_J(5840)^0$ BRANCHING RATIOS

$\Gamma(B^{*+} \pi^-)/\Gamma_{\text{total}}$					Γ_1/Γ
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT	
seen	12k	AAIJ	15AB LHCB	pp at 7, 8 TeV	

$\Gamma(B^+ \pi^-)/\Gamma_{\text{total}}$					Γ_2/Γ
VALUE		DOCUMENT ID	TECN	COMMENT	
possibly seen		⁷ AAIJ	15AB LHCB	pp at 7, 8 TeV	

⁷ A $B\pi$ decay is forbidden from a $P = -(-1)^J$ parent, whereas $B^* \pi$ is allowed.

$B_J(5840)^0$ REFERENCES

AAIJ	15AB JHEP 1504 024	R. Aaij <i>et al.</i>	(LHCb Collab.)
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