

**$B_J(5840)^0$** 

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

$I, J, P$  need confirmation.

OMITTED FROM SUMMARY TABLE

Quantum numbers shown are quark-model predictions.

 **$B_J(5840)^0$  MASS**OUR FIT uses  $m_{B^+}$  and  $m_{B_J(5840)^0} - m_{B^+}$  to determine  $m_{B_J(5840)^0}$ .

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>
<b>5863±9 OUR FIT</b>	

 **$m_{B_J(5840)^0} - m_{B^+}$** 

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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**584± 9 OUR FIT****584± 5±7**      12k      <sup>1</sup> AAIJ      15AB LHCB       $pp$  at 7, 8 TeV

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

610±22±7      12k      <sup>2</sup> AAIJ      15AB LHCB       $pp$  at 7, 8 TeV

<sup>1</sup> AAIJ 15AB reports  $[m_{B_J^0} - m_{B^+}] - m_{\pi^-} = 444 \pm 5 \pm 7$  MeV which we adjust by the  $\pi^-$  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.

<sup>2</sup> AAIJ 15AB reports  $[m_{B_J^0} - m_{B^+}] - m_{\pi^-} = 471 \pm 22 \pm 7$  MeV which we adjust by the  $\pi^-$  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.

 **$m_{B_J(5840)^0} - m_{B^{*+}}$** 

<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. • • •

584±5±7      12k      <sup>1</sup> AAIJ      15AB LHCB       $pp$  at 7, 8 TeV

<sup>1</sup> AAIJ 15AB reports  $[m_{B_J^0} - m_{B^+}] - (m_{B^{*+}} - m_{B^+}) - m_{\pi^-} = 444 \pm 5 \pm 7$  MeV which we adjust by the  $\pi^-$  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**

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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**127±17±34**      12k      <sup>1</sup> AAIJ      15AB LHCB       $pp$  at 7, 8 TeV

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

107±20±34      12k      <sup>2</sup> AAIJ      15AB LHCB       $pp$  at 7, 8 TeV119±17±34      12k      <sup>3</sup> AAIJ      15AB LHCB       $pp$  at 7, 8 TeV

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

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

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

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### $B_J(5840)^0$ DECAY MODES

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1$ $B^{*+} \pi^-$	seen
$\Gamma_2$ $B^+ \pi^-$	possibly seen

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### $B_J(5840)^0$ BRANCHING RATIOS

$\Gamma(B^{*+} \pi^-)/\Gamma_{\text{total}}$					$\Gamma_1/\Gamma$
<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<b>seen</b>	12k	AAIJ	15AB LHCB	$pp$ at 7, 8 TeV	

$\Gamma(B^+ \pi^-)/\Gamma_{\text{total}}$					$\Gamma_2/\Gamma$
<u>VALUE</u>		<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<b>possibly seen</b>		<sup>1</sup> AAIJ	15AB LHCB	$pp$ at 7, 8 TeV	

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

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### $B_J(5840)^0$ REFERENCES

AAIJ      15AB JHEP 1504 024      R. Aaij *et al.*      (LHCb Collab.)

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