

**$B_2^*(5747)$** 

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

$I, J, P$  need confirmation.

Quantum numbers shown are quark-model predictions.

 **$B_2^*(5747)$  MASS** **$B_2^*(5747)^+$  mass**OUR FIT uses  $m_{B^0}$  and  $m_{B_2^{*+}} - m_{B^0}$  to determine  $m_{B_2^*(5747)^+}$ .

VALUE (MeV)	DOCUMENT ID
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**5737.2 ± 0.7 OUR FIT** **$m_{B_2^{*+}} - m_{B^0}$** 

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
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**457.5 ± 0.7 OUR FIT****457.5 ± 0.7 OUR AVERAGE**457.62 ± 0.72 ± 0.40      4k      <sup>1</sup>AAIJ      15AB LHCb       $p\bar{p}$  at 7, 8 TeV457.3 ± 1.3  $\begin{smallmatrix} +0.3 \\ -0.9 \end{smallmatrix}$       <sup>2</sup>AALTONEN      14I CDF       $p\bar{p}$  at 1.96 TeV

<sup>1</sup>AAIJ 15AB reports  $[m_{B_2^{*+}} - m_{B^0}] - m_{\pi^+} = 318.1 \pm 0.7 \pm 0.4$  MeV which we adjust by the  $\pi^+$  mass. The masses inside the square brackets were measured for each candidate event.

<sup>2</sup>AALTONEN 14I reports  $m_{B_2^*(5747)^+} - m_{B^0} - m_{\pi^+} = 317.7 \pm 1.2 \begin{smallmatrix} +0.3 \\ -0.9 \end{smallmatrix}$  MeV which we adjusted by the  $\pi^+$  mass.

 **$B_2^*(5747)^0$  mass**OUR FIT uses  $m_{B^+}$ ,  $m_{B_1^0} - m_{B^+}$ , and mass differences below to determine  $m_{B_2^*(5747)^0}$ . The  $-0.659$  correlation between statistical uncertainties of  $m_{B_1^0} - m_{B^+}$  and  $m_{B_2^{*0}} - m_{B_1^0}$  measurements reported by ABAZOV 07T is taken into account.

VALUE (MeV)	DOCUMENT ID
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**5739.5 ± 0.7 OUR FIT** Error includes scale factor of 1.4. **$m_{B_2^{*0}} - m_{B_1^0}$** 

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
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**13.4 ± 1.4 OUR FIT** Error includes scale factor of 1.3.**26.2 ± 3.1 ± 0.9**      <sup>1</sup>ABAZOV      07T D0       $p\bar{p}$  at 1.96 TeV

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

14.9  $\begin{smallmatrix} +2.2+1.2 \\ -2.5-1.4 \end{smallmatrix}$       <sup>1</sup>AALTONEN      09D CDF      Repl. by AALTONEN 14I<sup>1</sup>Observed in  $B_2^{*0} \rightarrow B^{*+} \pi^-$  and  $B_2^{*0} \rightarrow B^+ \pi^-$ . **$m_{B_2^{*0}} - m_{B^+}$** 

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
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**460.2 ± 0.6 OUR FIT** Error includes scale factor of 1.4.**459.9 ± 0.8 OUR AVERAGE** Error includes scale factor of 1.8.

$460.18 \pm 0.37 \pm 0.33$	17k	<sup>1</sup> AAIJ	15AB LHCB	$p\bar{p}$ at 7, 8 TeV
$457.5 \pm 1.2 \begin{smallmatrix} +0.8 \\ -0.9 \end{smallmatrix}$		<sup>2</sup> AALTONEN	14I CDF	$p\bar{p}$ at 1.96 TeV

<sup>1</sup> AAIJ 15AB reports  $[m_{B_2^{*0}} - m_{B^+}] - m_{\pi^-} = 320.6 \pm 0.4 \pm 0.3$  MeV which we adjust by the  $\pi^-$  mass. The masses inside the square brackets were measured for each candidate event.

<sup>2</sup> AALTONEN 14I reports  $m_{B_2^*(5747)^0} - m_{B^+} - m_{\pi^-} = 317.9 \pm 1.2 \begin{smallmatrix} +0.8 \\ -0.9 \end{smallmatrix}$  MeV which we adjusted by the  $\pi^-$  mass.

## $B_2^*(5747)$ WIDTH

### $B_2^*(5747)^+$ width

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>20 ±5 OUR AVERAGE</b>	Error includes scale factor of 2.2.			
$23.6 \pm 2.0 \pm 2.1$	4k	AAIJ	15AB LHCB	$p\bar{p}$ at 7, 8 TeV
11 $\begin{smallmatrix} +4 & +3 \\ -3 & -4 \end{smallmatrix}$		AALTONEN	14I CDF	$p\bar{p}$ at 1.96 TeV

### $B_2^*(5747)^0$ width

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>24.2 ±1.7 OUR AVERAGE</b>				
$24.5 \pm 1.0 \pm 1.5$	17k	AAIJ	15AB LHCB	$p\bar{p}$ at 7, 8 TeV
22 $\begin{smallmatrix} +3 & +4 \\ -2 & -5 \end{smallmatrix}$		AALTONEN	14I CDF	$p\bar{p}$ at 1.96 TeV

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

$22.7 \begin{smallmatrix} +3.8 & +3.2 \\ -3.2 & -10.2 \end{smallmatrix}$		AALTONEN	09D CDF	Repl. by AALTONEN 14I
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## $B_2^*(5747)$ DECAY MODES

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1$ $B\pi$	seen
$\Gamma_2$ $B^*\pi$	seen

### $\Gamma(B\pi)/\Gamma_{\text{total}}$

VALUE	EVTS	DOCUMENT ID	TECN	CHG	COMMENT	$\Gamma_1/\Gamma$
seen	4k,17k	AAIJ	15AB LHCB	±0	$p\bar{p}$ at 7, 8 TeV	
<b>seen</b>		AALTONEN	14I CDF	±	$p\bar{p}$ at 1.96 TeV	
seen		AALTONEN	09D CDF	0	$p\bar{p}$ at 1.96 TeV	
<b>seen</b>		ABAZOV	07T D0	0	$p\bar{p}$ at 1.96 TeV	

### $\Gamma(B^*\pi)/\Gamma_{\text{total}}$

VALUE	EVTS	DOCUMENT ID	TECN	CHG	COMMENT	$\Gamma_2/\Gamma$
seen	4k,17k	AAIJ	15AB LHCB	±0	$p\bar{p}$ at 7, 8 TeV	
seen		AALTONEN	09D CDF	0	$p\bar{p}$ at 1.96 TeV	
<b>seen</b>		ABAZOV	07T D0	0	$p\bar{p}$ at 1.96 TeV	

$\Gamma(B^*\pi)/\Gamma(B\pi)$		$\Gamma_2/\Gamma_1$			
<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>
<b>0.84 ± 0.27 OUR AVERAGE</b>					
0.71 ± 0.14 ± 0.30	17k	AAIJ	15AB LHCB	0	<i>pp</i> at 7, 8 TeV
1.0 ± 0.5 ± 0.8	4k	AAIJ	15AB LHCB	±	<i>pp</i> at 7, 8 TeV
1.10 ± 0.42 ± 0.31		<sup>1</sup> ABAZOV	07T D0	0	<i>p<math>\bar{p}</math></i> at 1.96 TeV
<sup>1</sup> Converted from measured ratio of $R = B(B_2^{*0} \rightarrow B^{*+} \pi^-) / B(B_2^{*0} \rightarrow B^{(*)+} \pi^-)$ = 0.475 ± 0.095 ± 0.069.					

### $B_2^*(5747)$ 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.)
AALTONEN	09D	PRL 102 102003	T. Aaltonen <i>et al.</i>	(CDF Collab.)
ABAZOV	07T	PRL 99 172001	V.M. Abazov <i>et al.</i>	(D0 Collab.)