

**$B_2^*(5747)^0$**  $I(J^P) = \frac{1}{2}(2^+)$  Status: \*\*\*  
 $I, J, P$  need confirmation.

Quantum numbers shown are quark-model predictions.

 **$B_2^*(5747)^0$  MASS**

OUR FIT uses  $m_{B^+}$ ,  $m_{B_1^0} - m_{B^+}$ , and  $m_{B_2^{*0}} - m_{B_1^0}$  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.

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>
<b>5739.5 ± 0.7 OUR FIT</b>	Error includes scale factor of 1.4.

 **$m_{B_2^{*0}} - m_{B_1^0}$** 

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>13.5 ± 1.4 OUR FIT</b>	Error includes scale factor of 1.3.		
<b>26.2 ± 3.1 ± 0.9</b>	<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. ● ● ●			
$14.9^{+2.2+1.2}_{-2.5-1.4}$	<sup>1</sup> AALTONEN	09D CDF	Repl. by AALTONEN 14i

<sup>1</sup> Observed in  $B_2^{*0} \rightarrow B^{*+} \pi^-$  and  $B_2^{*0} \rightarrow B^+ \pi^-$ . **$m_{B_2^{*0}} - m_{B^+}$** 

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>460.2 ± 0.6 OUR FIT</b>	Error includes scale factor of 1.4.			
<b>459.9 ± 0.8 OUR AVERAGE</b>	Error includes scale factor of 1.8.			
$460.18 \pm 0.37 \pm 0.33$	17K	<sup>2</sup> AAIJ	15AB LHCB	$p\bar{p}$ at 7, 8 TeV
$457.5 \pm 1.2^{+0.8}_{-0.9}$		<sup>3</sup> AALTONEN	14i CDF	$p\bar{p}$ at 1.96 TeV

<sup>2</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>3</sup> AALTONEN 14i reports  $m_{B_2^*(5747)^0} - m_{B^+} - m_{\pi^-} = 317.9 \pm 1.2^{+0.8}_{-0.9}$  MeV which we adjusted by the  $\pi^-$  mass.

 **$B_2^*(5747)^0$  WIDTH**

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<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
$22^{+3+4}_{-2-5}$		AALTONEN	14i CDF	$p\bar{p}$ at 1.96 TeV
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
$22.7^{+3.8+3.2}_{-3.2-10.2}$		AALTONEN	09D CDF	Repl. by AALTONEN 14i

## $B_2^*(5747)^0$ DECAY MODES

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

## $B_2^*(5747)^0$ 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>
seen	17K	AAIJ	15AB LHCB	$pp$ at 7, 8 TeV
dominant		AALTONEN	09D CDF	$p\bar{p}$ at 1.96 TeV
<b>dominant</b>		ABAZOV	07T D0	$p\bar{p}$ at 1.96 TeV

### $\Gamma(B^{*+} \pi^-)/\Gamma_{\text{total}}$ $\Gamma_2/\Gamma$

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
seen	17K	AAIJ	15AB LHCB	$pp$ at 7, 8 TeV
dominant		AALTONEN	09D CDF	$p\bar{p}$ at 1.96 TeV
<b>dominant</b>		ABAZOV	07T D0	$p\bar{p}$ 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>COMMENT</u>
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**0.82 ± 0.28 OUR AVERAGE**

0.71 ± 0.14 ± 0.30      17K      AAIJ      15AB LHCB       $pp$  at 7, 8 TeV

1.10 ± 0.42 ± 0.31      <sup>4</sup> AB AZOV      07T D0       $p\bar{p}$  at 1.96 TeV

<sup>4</sup> Converted from measured ratio of  $R = B(B_2^{*0} \rightarrow B^{*+} \pi^-) / B(B_2^{*0} \rightarrow B^{(*)+} \pi^-)$   
 $= 0.475 \pm 0.095 \pm 0.069$ .

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