

$B_2^*(5747)$

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

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 $m_{B_2^*(5747)^+}$.

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>
5737.3±0.7 OUR FIT	

 $m_{B_2^{*+}} - m_{B^0}$

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
457.5 ±0.7 OUR FIT				
457.5 ±0.7 OUR AVERAGE				
457.62±0.72±0.40	4k	¹ AAIJ	15AB LHCb	pp at 7, 8 TeV
457.3 ±1.3 $^{+0.3}_{-0.9}$		² AALTONEN	14l CDF	$p\bar{p}$ at 1.96 TeV

¹ 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 π^+ mass. The masses inside the square brackets were measured for each candidate event.

² AALTONEN 14l reports $m_{B_2^*(5747)^+} - m_{B^0} - m_{\pi^+} = 317.7 \pm 1.2^{+0.3}_{-0.9}$ MeV which we adjusted by the π^+ 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.

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>
5739.6±0.7 OUR FIT	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>
13.5±1.4 OUR FIT	Error includes scale factor of 1.3.		
26.2±3.1±0.9	¹ ABAZOV	07T D0	$p\bar{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
14.9 $^{+2.2+1.2}_{-2.5-1.4}$	¹ AALTONEN	09D CDF	Repl. by AALTONEN 14l

¹ 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
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±0.37±0.33	17k	¹ AAIJ	15AB LHCB	$p\bar{p}$ at 7, 8 TeV
457.5 ±1.2 ^{+0.8} _{-0.9}		² AALTONEN	14l CDF	$p\bar{p}$ at 1.96 TeV

¹ 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 π^- mass. The masses inside the square brackets were measured for each candidate event.

² AALTONEN 14l 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 π^- mass.

$B_2^{*}(5747)$ WIDTH

$B_2^{*}(5747)^+$ width

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
20 ±5 OUR AVERAGE	Error includes scale factor of 2.2.			
23.6±2.0±2.1	4k	AAIJ	15AB LHCB	$p\bar{p}$ at 7, 8 TeV
11 ⁺⁴ ₋₃ ⁺³ ₋₄		AALTONEN	14l CDF	$p\bar{p}$ at 1.96 TeV

$B_2^{*}(5747)^0$ width

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
24.2±1.7 OUR AVERAGE				
24.5±1.0± 1.5	17k	AAIJ	15AB LHCB	$p\bar{p}$ at 7, 8 TeV
22 ⁺³ ₋₂ ⁺⁴ ₋₅		AALTONEN	14l 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 14l
---	--	----------	---------	-----------------------

$B_2^{*}(5747)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)
$\Gamma_1 \quad B\pi$	seen
$\Gamma_2 \quad B^*\pi$	seen

$B_2^{*}(5747)$ BRANCHING RATIOS

$\Gamma(B\pi)/\Gamma_{\text{total}}$					Γ_1/Γ
VALUE	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
seen	4k,17k	AAIJ	15AB LHCB	±0	$p\bar{p}$ at 7, 8 TeV
seen		AALTONEN	14l CDF	±	$p\bar{p}$ at 1.96 TeV
seen		AALTONEN	09D CDF	0	$p\bar{p}$ at 1.96 TeV
seen		ABAZOV	07T D0	0	$p\bar{p}$ at 1.96 TeV

$\Gamma(B^*\pi)/\Gamma_{\text{total}}$			Γ_2/Γ		
<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>
seen	4k,17k	AAIJ	15AB LHCB	± 0	pp at 7, 8 TeV
seen		AALTONEN	09D CDF	0	$p\bar{p}$ at 1.96 TeV
seen		ABAZOV	07T D0	0	$p\bar{p}$ at 1.96 TeV

$\Gamma(B^*\pi)/\Gamma(B\pi)$			Γ_2/Γ_1		
<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>
0.84 ± 0.27 OUR AVERAGE					
$0.71 \pm 0.14 \pm 0.30$	17k	AAIJ	15AB LHCB	0	pp at 7, 8 TeV
$1.0 \pm 0.5 \pm 0.8$	4k	AAIJ	15AB LHCB	$\pm$	pp at 7, 8 TeV
$1.10 \pm 0.42 \pm 0.31$		¹ ABAZOV	07T D0	0	$p\bar{p}$ at 1.96 TeV

¹ Converted from measured ratio of $R = B(B_2^{*0} \rightarrow B^{*+} \pi^-) / B(B_2^{*0} \rightarrow B^{(*)+} \pi^-)$
= $0.475 \pm 0.095 \pm 0.069$.

$B_2^*(5747)$ 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.)