

$B_1(5721)$

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

I, J, P need confirmation.

Quantum numbers shown are quark-model predictions.

 $B_1(5721)$ MASS **$B_1(5721)^+$ mass**OUR FIT uses $m_{B^{*0}}$ and $m_{B_1^+} - m_{B^{*0}}$ to determine $m_{B_1(5721)^+}$.

VALUE (MeV)	DOCUMENT ID
-------------	-------------

 $5726.0^{+2.5}_{-2.7}$ OUR FIT **$m_{B_1^+} - m_{B^{*0}}$**

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
-------------	------	-------------	------	---------

 $401.2^{+2.4}_{-2.7}$ OUR FIT **$401.2^{+2.4}_{-2.7}$ OUR AVERAGE**400.5 ± 1.8 ± 3.1 8k ¹ AAIJ 15AB LHCb pp at 7, 8 TeV402 ± 3 $^{+1}_{-3}$ ² AALTONEN 14l CDF $p\bar{p}$ at 1.96 TeV¹ AAIJ 15AB reports $[m_{B_1^+} - m_{B^0}] - (m_{B^{*0}} - m_{B^0}) - m_{\pi^+} = 260.9 \pm 1.8 \pm 3.1$ MeV which we adjust by the π^+ mass and assume $(m_{B^{*0}} - m_{B^0}) = (m_{B^{*+}} - m_{B^+}) = 45.01 \pm 0.30 \pm 0.23$ MeV. The masses inside the square brackets were measured for each candidate event.² AALTONEN 14l reports $m_{B_1(5721)^+} - m_{B^{*0}} - m_{\pi^+} = 262 \pm 3^{+1}_{-3}$ MeV which we adjusted by the π^+ mass. **$B_1(5721)^0$ mass**OUR FIT uses mass differences measurements listed below to determine the mass $m_{B_1(5721)^0}$.

VALUE (MeV)	DOCUMENT ID
-------------	-------------

 5726.1 ± 1.2 OUR FIT Error includes scale factor of 1.2. **$m_{B_1^0} - m_{B^+}$**

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
-------------	-------------	------	---------

 446.7 ± 1.2 OUR FIT Error includes scale factor of 1.2. **$441.5 \pm 2.4 \pm 1.3$** ¹ ABAZOV 07T D0 $p\bar{p}$ at 1.96 TeV

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

446.2 $^{+1.9+1.0}_{-2.1-1.2}$ ¹ AALTONEN 09D CDF Repl. by AALTONEN 14l¹ Observed in $B_1^0 \rightarrow B^{*+} \pi^-$. **$m_{B_1^0} - m_{B^{*+}}$**

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
-------------	------	-------------	------	---------

 401.4 ± 1.2 OUR FIT Error includes scale factor of 1.2. **402.8 ± 1.1 OUR AVERAGE**403.4 ± 0.7 ± 1.5 35k ¹ AAIJ 15AB LHCb pp at 7, 8 TeV402.3 ± 0.9 $^{+1.1}_{-1.2}$ ² AALTONEN 14l CDF $p\bar{p}$ at 1.96 TeV

- ¹ AAIJ 15AB reports $[m_{B_1^0} - m_{B^+}] - (m_{B^{*+}} - m_{B^+}) - m_{\pi^-} = 263.9 \pm 0.7 \pm 1.4$ MeV which we adjust by the π^- mass and $(m_{B^{*+}} - m_{B^+}) = 45.01 \pm 0.30 \pm 0.23$ MeV. The masses inside the square brackets were measured for each candidate event.
- ² AALTONEN 14I reports $m_{B_1(5721)^0} - m_{B^{*+}} - m_{\pi^-} = 262.7 \pm 0.9^{+1.1}_{-1.2}$ MeV which we adjusted by the π^- mass.

$B_1(5721)$ WIDTH

$B_1(5721)^+$ width

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
31 ± 6 OUR AVERAGE		Error includes scale factor of 1.1.		
29.1 ± 3.6 ± 4.3	8k	AAIJ	15AB LHCB	$p\bar{p}$ at 7, 8 TeV
49 $^{+12}_{-10}$ $^{+2}_{-13}$		AALTONEN	14I CDF	$p\bar{p}$ at 1.96 TeV

$B_1(5721)^0$ width

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
27.5 ± 3.4 OUR AVERAGE		Error includes scale factor of 1.1.		
30.1 ± 1.5 ± 3.5	35k	AAIJ	15AB LHCB	$p\bar{p}$ at 7, 8 TeV
23 ± 3 ± 4		AALTONEN	14I CDF	$p\bar{p}$ at 1.96 TeV

$B_1(5721)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)
Γ_1 $B^* \pi$	seen

$B_1(5721)$ BRANCHING RATIOS

$\Gamma(B^* \pi)/\Gamma_{\text{total}}$	DOCUMENT ID	TECN	CHG	COMMENT	Γ_1/Γ
seen	AAIJ	15AB LHCB	±0	$p\bar{p}$ at 7, 8 TeV	
seen	AALTONEN	14I CDF	±	$p\bar{p}$ at 1.96 TeV	
seen	AALTONEN	09D CDF	0	$p\bar{p}$ at 1.96 TeV	
seen	¹ ABAZOV	07T D0	0	$p\bar{p}$ at 1.96 TeV	

¹ Observed in $B_1^0 \rightarrow B^{*+} \pi^-$ with $B^{*+} \rightarrow B^+ \gamma$ and $B^+ \rightarrow J/\psi \pi^+$.

$B_1(5721)$ 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.)