$B_1(5721)$

$I(J^P) = \frac{1}{2}(1^+)$
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*
$5725.9^{+2.5}_{-2.7}$ 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					
$400.5 \pm 1.8 \pm 3.1$	8k	[1] AAIJ	15AB	LHCB	pp at 7, 8 TeV
$402 \pm 3 \, {}^{+1}_{-3}$		[2] AALTONEN	14I	CDF	$p\overline{p}$ at 1.96 TeV

[1] 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 14I 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 ± 1.3 OUR FIT Error includes scale factor of 1.2.				
$441.5 \pm 2.4 \pm 1.3$	[1] ABAZOV	07T	D0	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$446.2^{+1.9}_{-2.1} {}^{+1.0}_{-1.2}$	[1] AALTONEN	09D	CDF	Repl. by AALTONEN 14I

[1] Observed in $B_1^0 \to B^{*+}\pi^-$.

$m_{B_1^0} - m_{B^+}$

VALUE (MeV)	*DOCUMENT ID*	*TECN*	*COMMENT*
446.7 ± 1.3 OUR FIT Error includes scale factor of 1.2.			
$441.5 \pm 2.4 \pm 1.3$	[1] ABAZOV 07T	D0	$p\overline{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
$446.2^{+1.9}_{-2.1} {}^{+1.0}_{-1.2}$	[1] AALTONEN 09D	CDF	Repl. by AALTONEN 14I

[1] Observed in $B_1^0 \to B^{*+}\pi^-$.

$m_{B_1^0} - m_{B^{*+}}$

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 TeV
$402.3 \pm 0.9^{+1.1}_{-1.2}$		[2] AALTONEN	14I	CDF	$p\overline{p}$ 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	pp at 7, 8 TeV
$49\ ^{+12}_{-10}\ ^{+2}_{-13}$		AALTONEN	14I	CDF	$p\overline{p}$ 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	pp at 7, 8 TeV
23 ±3 ±4		AALTONEN	14I	CDF	$p\overline{p}$ at 1.96 TeV

$B_1(5721)$ DECAY MODES

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

$\Gamma(B^*\pi)/\Gamma_{\text{total}}$ Γ_1/Γ

VALUE	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
seen	AAIJ	15AB	LHCB	±0	pp at 7, 8 TeV
seen	AALTONEN	14I	CDF	±	$p\overline{p}$ at 1.96 TeV
seen	AALTONEN	09D	CDF	0	$p\overline{p}$ at 1.96 TeV
seen	[1] ABAZOV	07T	D0	0	$p\overline{p}$ at 1.96 TeV

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

$B_1(5721)$ REFERENCES

AAIJ	15AB	JHEP 1504 024	R. Aaij *et al.*	(LHCb Collab.)
AALTONEN	14I	PR D90 012013	T. Aaltonen *et al.*	(CDF Collab.)
AALTONEN	09D	PRL 102 102003	T. Aaltonen *et al.*	(CDF Collab.)
ABAZOV	07T	PRL 99 172001	V.M. Abazov *et al.*	(D0 Collab.)