$B_2^*(5747)$

$I(J^P) = \frac{1}{2}(2^+)$
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*
5737.3±0.7 OUR FIT	

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

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
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	14I	CDF	$p\overline{p}$ 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 14I 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.

VALUE (MeV)	*DOCUMENT ID*
5739.6±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*
13.5±1.4 OUR FIT Error includes scale factor of 1.3.				
26.2±3.1±0.9	[1] ABAZOV	07T	D0	$p\overline{p}$ 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 14I

[1] Observed in $B_2^{*0} \to B^{*+}\pi^-$ and $B_2^{*0} \to B^+\pi^-$.

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

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	pp at 7, 8 TeV
457.5 ±1.2 $^{+0.8}_{-0.9}$		[2] AALTONEN	14I	CDF	$p\overline{p}$ 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 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 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	pp at 7, 8 TeV
$11\ ^{+4}_{-3}\ ^{+3}_{-4}$		AALTONEN	14I	CDF	$p\overline{p}$ 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	pp at 7, 8 TeV
$22\ ^{+3}_{-2}\ ^{+4}_{-5}$		AALTONEN	14I	CDF	$p\overline{p}$ 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

$B_2^*(5747)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$B\pi$	seen
Γ_2	$B^*\pi$	seen

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

VALUE	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
seen	4k,17k	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		ABAZOV	07T	D0	0	$p\overline{p}$ at 1.96 TeV

$\Gamma(B^*\pi)/\Gamma_{\text{total}}$ Γ_2/Γ

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

$\Gamma(B^*\pi)/\Gamma(B\pi)$ Γ_2/Γ_1

VALUE	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
0.84±0.27 OUR AVERAGE						
0.71±0.14±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	$p\overline{p}$ 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 *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.)