

$B_{s2}^*(5840)^0$

$$I(J^P) = 0(2^+)$$

I, J, P need confirmation.

Quantum numbers shown are quark-model predictions.

 $B_{s2}^*(5840)^0$ MASS

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
5839.88±0.12 OUR FIT			
5839.92±0.14 OUR AVERAGE			
5839.86±0.09±0.17	SIRUNYAN	18DF CMS	pp at 8 TeV
5839.99±0.05±0.20	AAIJ	130 LHCb	pp at 7 TeV
5839.6 ±1.1 ±0.7	¹ ABAZOV	08E D0	$p\bar{p}$ at 1.96 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
5839.7 ±0.7	² AALTONEN	08K CDF	Repl. by AALTONEN 14l
¹ Observed in $B_{s2}^{*0} \rightarrow B^+ K^-$. Measured production rate of B_{s2}^{*0} relative to B^+ to be $(1.15 \pm 0.23 \pm 0.13)\%$.			
² Uses two-body decays into K^- and B^+ mesons reconstructed as $B^+ \rightarrow J/\psi K^+$, $J/\psi \rightarrow \mu^+ \mu^-$ or $B^+ \rightarrow \bar{D}^0 \pi^+$, $\bar{D}^0 \rightarrow K^+ \pi^-$.			

$m_{B_{s2}^{*0}} - m_{B_{s1}^0}$

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
10.5±0.6	¹ AALTONEN	08K CDF	Repl. by AALTONEN 14l
¹ Uses two-body decays into K^- and B^+ mesons reconstructed as $B^+ \rightarrow J/\psi K^+$, $J/\psi \rightarrow \mu^+ \mu^-$ or $B^+ \rightarrow \bar{D}^0 \pi^+$, $\bar{D}^0 \rightarrow K^+ \pi^-$.			

$m_{B_{s2}^{*0}} - m_{B^+}$

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
560.48±0.12 OUR FIT			
560.41±0.13±0.14	¹ AALTONEN	14l CDF	$p\bar{p}$ at 1.96 TeV
¹ AALTONEN 14l reports $m_{B_{s2}^*(5840)^0} - m_{B^+} - m_{K^-} = 66.73 \pm 0.13 \pm 0.14$ MeV which we adjusted by the K^- mass.			

 $B_{s2}^*(5840)^0$ WIDTH

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
1.49±0.27 OUR AVERAGE			
1.52±0.34±0.30	SIRUNYAN	18DF CMS	pp at 8 TeV
1.4 ±0.4 ±0.2	AALTONEN	14l CDF	$p\bar{p}$ at 1.96 TeV
1.56±0.13±0.47	¹ AAIJ	130 LHCb	pp at 7 TeV
¹ Uses $B_{s2}^*(5840)^0 \rightarrow B^{*+} K^-$ decays.			

$B_{s2}^*(5840)^0$ DECAY MODES

Branching fractions are given relative to the one **DEFINED AS 1**.

Mode	Fraction (Γ_i/Γ)
Γ_1 $B^+ K^-$	DEFINED AS 1
Γ_2 $B^{*+} K^-$	0.093 ± 0.018
Γ_3 $B^0 K_S^0$	0.43 ± 0.11
Γ_4 $B^{*0} K_S^0$	0.04 ± 0.04

$B_{s2}^*(5840)^0$ BRANCHING RATIOS

$\Gamma(B^+ K^-)/\Gamma_{\text{total}}$ Γ_1/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
seen	AALTONEN	08K	CDF $p\bar{p}$ at 1.96 TeV
seen	¹ ABAZOV	08E	D0 $p\bar{p}$ at 1.96 TeV

¹ Measured production rate of B_{s2}^{*0} relative to B^+ to be $(1.15 \pm 0.23 \pm 0.13)\%$.

$\Gamma(B^{*+} K^-)/\Gamma(B^+ K^-)$ Γ_2/Γ_1

VALUE	DOCUMENT ID	TECN	COMMENT
$0.093 \pm 0.013 \pm 0.012$	AAIJ	130	LHCB pp at 7 TeV

$\Gamma(B^{*0} K_S^0)/\Gamma(B^0 K_S^0)$ Γ_4/Γ_3

VALUE	DOCUMENT ID	TECN	COMMENT
$0.093 \pm 0.086 \pm 0.014$	¹ SIRUNYAN	18DF	CMS pp at 8 TeV

¹ With the branching fraction $B(B^0 \rightarrow J/\psi K^{*0}) = (1.28 \pm 0.05) \times 10^{-3}$.

$\Gamma(B^0 K_S^0)/\Gamma(B^+ K^-)$ Γ_3/Γ_1

VALUE	DOCUMENT ID	TECN	COMMENT
$0.432 \pm 0.077 \pm 0.078$	¹ SIRUNYAN	18DF	CMS pp at 8 TeV

¹ With the branching fractions $B(B^+ \rightarrow J/\psi K^+) = (1.026 \pm 0.031) \times 10^{-3}$ and $B(B^0 \rightarrow J/\psi K^{*0}) = (1.28 \pm 0.05) \times 10^{-3}$.

$\Gamma(B^{*+} K^-)/\Gamma(B^+ K^-)$ Γ_2/Γ_1

VALUE	DOCUMENT ID	TECN	COMMENT
$0.081 \pm 0.021 \pm 0.015$	¹ SIRUNYAN	18DF	CMS pp at 8 TeV

¹ With the branching fraction $B(B^+ \rightarrow J/\psi K^+) = (1.026 \pm 0.031) \times 10^{-3}$.

$B_{s2}^*(5840)^0$ REFERENCES

SIRUNYAN	18DF	EPJ C78 939	A.M. Sirunyan <i>et al.</i>	(CMS Collab.)
AALTONEN	14I	PR D90 012013	T. Aaltonen <i>et al.</i>	(CDF Collab.)
AAIJ	130	PRL 110 151803	R. Aaij <i>et al.</i>	(LHCb Collab.)
AALTONEN	08K	PRL 100 082001	T. Aaltonen <i>et al.</i>	(CDF Collab.)
ABAZOV	08E	PRL 100 082002	V.M. Abazov <i>et al.</i>	(D0 Collab.)