

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

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

$I, J, P$  need confirmation.

Quantum numbers shown are quark-model predictions.

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

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
<b>5839.86 ± 0.12 OUR FIT</b>			
<b>5839.92 ± 0.14 OUR AVERAGE</b>			
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	<sup>1</sup> 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	<sup>2</sup> AALTONEN	08K CDF	Repl. by AALTONEN 14l
<sup>1</sup> Observed in $B_{s2}^{*0} \rightarrow B^+ K^-$ . Measured production rate of $B_{s2}^{*0}$ relative to $B^+$ to be $(1.15 \pm 0.23 \pm 0.13)\%$ .			
<sup>2</sup> 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	<sup>1</sup> AALTONEN	08K CDF	Repl. by AALTONEN 14l
<sup>1</sup> 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
<b>560.52 ± 0.14 OUR FIT</b>			
<b>560.41 ± 0.13 ± 0.14</b>	<sup>1</sup> AALTONEN	14l CDF	$p\bar{p}$ at 1.96 TeV
<sup>1</sup> 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
<b>1.49 ± 0.27 OUR AVERAGE</b>			
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	<sup>1</sup> AAIJ	130 LHCb	$pp$ at 7 TeV
<sup>1</sup> 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 ( $\Gamma_i/\Gamma$ )
$\Gamma_1$ $B^+ K^-$	<b>DEFINED AS 1</b>
$\Gamma_2$ $B^{*+} K^-$	$0.093 \pm 0.018$
$\Gamma_3$ $B^0 K_S^0$	$0.43 \pm 0.11$
$\Gamma_4$ $B^{*0} K_S^0$	$0.04 \pm 0.04$

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

$\Gamma(B^+ K^-)/\Gamma_{\text{total}}$				$\Gamma_1/\Gamma$
VALUE	DOCUMENT ID	TECN	COMMENT	
<b>seen</b>	AALTONEN	08K	CDF	$p\bar{p}$ at 1.96 TeV
<b>seen</b>	<sup>1</sup> ABAZOV	08E	D0	$p\bar{p}$ at 1.96 TeV

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

$\Gamma(B^{*+} K^-)/\Gamma(B^+ K^-)$				$\Gamma_2/\Gamma_1$
VALUE	DOCUMENT ID	TECN	COMMENT	
<b><math>0.093 \pm 0.013 \pm 0.012</math></b>	AAIJ	130	LHCB	$pp$ at 7 TeV

$\Gamma(B^{*0} K_S^0)/\Gamma(B^0 K_S^0)$				$\Gamma_4/\Gamma_3$
VALUE	DOCUMENT ID	TECN	COMMENT	
<b><math>0.093 \pm 0.086 \pm 0.014</math></b>	<sup>1</sup> SIRUNYAN	18DF	CMS	$pp$ at 8 TeV

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

$\Gamma(B^0 K_S^0)/\Gamma(B^+ K^-)$				$\Gamma_3/\Gamma_1$
VALUE	DOCUMENT ID	TECN	COMMENT	
<b><math>0.432 \pm 0.077 \pm 0.078</math></b>	<sup>1</sup> SIRUNYAN	18DF	CMS	$pp$ at 8 TeV

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

$\Gamma(B^{*+} K^-)/\Gamma(B^+ K^-)$				$\Gamma_2/\Gamma_1$
VALUE	DOCUMENT ID	TECN	COMMENT	
<b><math>0.081 \pm 0.021 \pm 0.015</math></b>	<sup>1</sup> SIRUNYAN	18DF	CMS	$pp$ at 8 TeV

<sup>1</sup> 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.)