

$$I(J^P) = \frac{1}{2}(\frac{1}{2}^+) \text{ Status: } ***$$

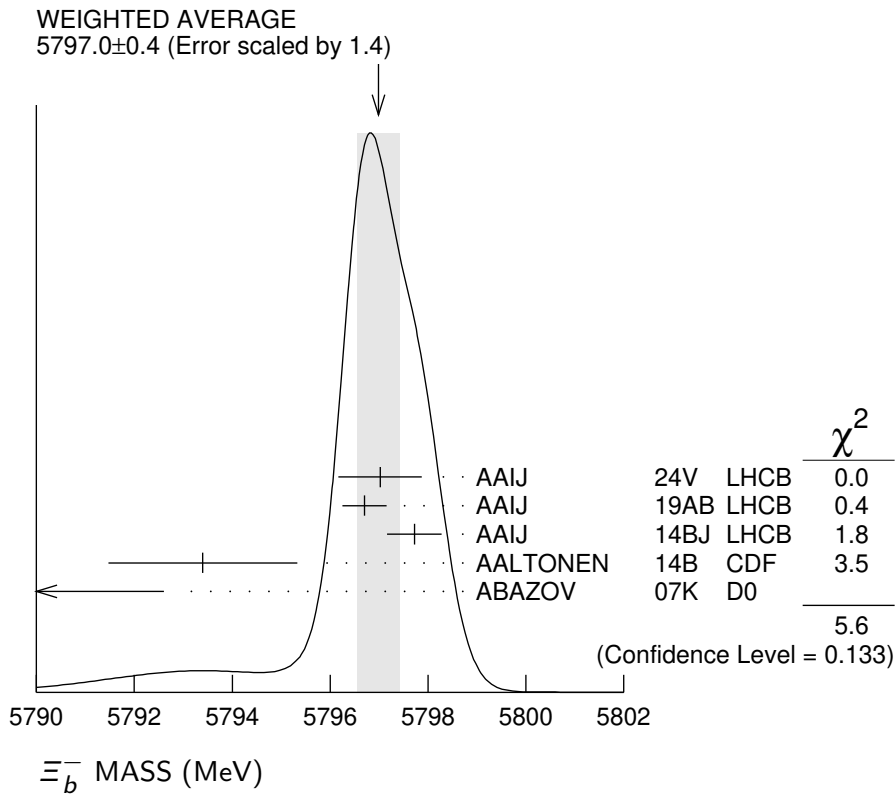
$I, J, P$  need confirmation.

In the quark model,  $\Xi_b^0$  and  $\Xi_b^-$  are an isodoublet ( $usb, dsb$ ) state; the lowest  $\Xi_b^0$  and  $\Xi_b^-$  ought to have  $J^P = 1/2^+$ . None of  $I, J,$  or  $P$  have actually been measured.

## $\Xi_b^-$ MASS

### $\Xi_b^-$ MASS

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
<b>5797.0 ± 0.4 OUR AVERAGE</b>	Error includes scale factor of 1.4. See the ideogram below.		
5797.02 ± 0.63 ± 0.57	<sup>1</sup> AAIJ	24V LHCb	$pp$ at 13 TeV
5796.70 ± 0.39 ± 0.23	AAIJ	19AB LHCb	$pp$ at 7, 8 and 13 TeV
5797.72 ± 0.46 ± 0.31	<sup>2</sup> AAIJ	14BJ LHCb	$pp$ at 7, 8 TeV
5793.4 ± 1.8 ± 0.7	<sup>3</sup> AALTONEN	14B CDF	$p\bar{p}$ at 1.96 TeV
5774 ± 11 ± 15	<sup>4</sup> ABAZOV	07K D0	$p\bar{p}$ at 1.96 TeV
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
5795.8 ± 0.9 ± 0.4	<sup>5</sup> AAIJ	13AV LHCb	Repl. by AAIJ 19AB
5796.7 ± 5.1 ± 1.4	<sup>6</sup> AALTONEN	11X CDF	Repl. by AALTONEN 14B
5790.9 ± 2.6 ± 0.8	<sup>7</sup> AALTONEN	09AP CDF	Repl. by AALTONEN 14B
5792.9 ± 2.5 ± 1.7	<sup>8</sup> AALTONEN	07A CDF	Repl. by AALTONEN 09AP



<sup>1</sup> Uses  $\Xi_b^- \rightarrow \Xi_c^0 D_s^-$  decays.

- <sup>2</sup> Reconstructed in  $\Xi_b^- \rightarrow \Xi_c^0 \pi^-$ ,  $\Xi_c^0 \rightarrow p K^- K^- \pi^+$  decays. Reference  $\Lambda_b^0$  mass  $5619.30 \pm 0.34$  MeV from AAIJ 14AA.
- <sup>3</sup> Uses  $\Xi_b^- \rightarrow J/\psi \Xi^-$  and  $\Xi_c^0 \pi^-$  decays.
- <sup>4</sup> Observed in  $\Xi_b^- \rightarrow J/\psi \Xi^-$  decays with  $15.2 \pm 4.4^{+1.9}_{-0.4}$  candidates, a significance of 5.5 sigma.
- <sup>5</sup> Measured in  $\Xi_b^- \rightarrow J/\psi \Xi^-$  decays.
- <sup>6</sup> Measured in  $\Xi_b^- \rightarrow \Xi_c^0 \pi^-$  with  $25.8^{+5.5}_{-5.2}$  candidates.
- <sup>7</sup> Measured in  $\Xi_b^- \rightarrow J/\psi \Xi^-$  decays with  $66^{+14}_{-9}$  candidates.
- <sup>8</sup> Observed in  $\Xi_b^- \rightarrow J/\psi \Xi^-$  decays with  $17.5 \pm 4.3$  candidates, a significance of 7.7 sigma.

**$m_{\Xi_b^-} - m_{\Lambda_b^0}$**

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
<b>177.48 ± 0.24 OUR AVERAGE</b>	Error includes scale factor of 1.1.		
177.68 ± 0.63 ± 0.33	1 AAIJ	24V LHCb	$pp$ at 13 TeV
177.71 ± 0.24 ± 0.16	2 AAIJ	21 LHCb	$pp$ at 7, 8, 13 TeV
177.08 ± 0.47 ± 0.16	3 AAIJ	17BE LHCb	$pp$ at 7, 8 TeV
176.2 ± 0.9 ± 0.1	4 AAIJ	13AV LHCb	$pp$ at 7 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •			
177.73 ± 0.33 ± 0.14	5 AAIJ	17BE LHCb	$pp$ at 7, 8 TeV
178.36 ± 0.46 ± 0.16	2,6 AAIJ	14BJ LHCb	Repl. by AAIJ 2021

- <sup>1</sup> Uses  $\Xi_b^- \rightarrow \Xi_c^0 D_s^-$  and  $\Lambda_b^0 \rightarrow \Lambda_c^+ D_s^-$  decays.
- <sup>2</sup> Reconstructed in  $\Xi_b^- \rightarrow \Xi_c^0 \pi^-$ ,  $\Xi_c^0 \rightarrow p K^- K^- \pi^+$  decays. Reference decays  $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$  were used.
- <sup>3</sup> Reconstructed in  $\Xi_b^- \rightarrow J/\psi \Lambda K^-$  decays. Reference decays  $\Lambda_b^0 \rightarrow J/\psi \Lambda$  were used.
- <sup>4</sup> Reconstructed in  $\Xi_b^- \rightarrow J/\psi \Xi^-$  decays.
- <sup>5</sup> Combination of the original statistically independent measurements of AAIJ 17BE and AAIJ 14BJ taking into account correlation between systematic uncertainties.
- <sup>6</sup> Combined with AAIJ 17BE.

**$m_{\Xi_b^-} - m_{\Xi_c^0}$**

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
<b>5.9 ± 0.5 OUR AVERAGE</b>			
5.90 ± 0.87 ± 0.32	1 AAIJ	24V LHCb	$pp$ at 13 TeV
5.92 ± 0.60 ± 0.23	2 AAIJ	14BJ LHCb	$pp$ at 7, 8 TeV
3.1 ± 5.6 ± 1.3	3 AALTONEN	11X CDF	$p\bar{p}$ at 1.96 TeV

- <sup>1</sup> Uses  $\Xi_b^- \rightarrow \Xi_c^0 D_s^-$  and  $\Xi_c^0 \rightarrow \Xi_c^+ D_s^-$  decays.
- <sup>2</sup> Reconstructed in  $\Xi_b^- \rightarrow \Xi_c^0 \pi^-$ ,  $\Xi_c^0 \rightarrow p K^- K^- \pi^+$  decays. Uses  $m(\Xi_c^0) - m(\Lambda_b^0) = 172.44 \pm 0.39 \pm 0.17$  MeV from AAIJ 14Z.
- <sup>3</sup> Derived from measurements in  $\Xi_b^0 \rightarrow \Xi_c^+ \pi^-$  and  $\Xi_b^- \rightarrow J/\psi \Xi^-$  from AALTONEN 09AP taking correlated systematic uncertainties into account.

**$\Xi_b^-$  MEAN LIFE**

“OUR EVALUATION” is an average using rescaled values of the data listed below. The average and rescaling were performed by the Heavy Flavor Averaging Group (HFLAV) and are described at <https://hflav.web.cern.ch/>. The averaging/rescaling procedure takes into account correlations between the measurements and asymmetric lifetime errors.

 **$\Xi_b^-$  MEAN LIFE**

<u>VALUE (<math>10^{-12}</math> s)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b><math>1.575 \pm 0.021</math> OUR EVALUATION</b>	(Produced by HFLAV)		
<b><math>1.570 \pm 0.023</math> OUR AVERAGE</b>			
$1.578 \pm 0.018 \pm 0.015$	<sup>1,2</sup> AAIJ	24AJ LHCb	$pp$ at 7, 8, 13 TeV
$1.55^{+0.10}_{-0.09} \pm 0.03$	<sup>3</sup> AAIJ	14T LHCb	$pp$ at 7, 8 TeV
$1.32 \pm 0.14 \pm 0.02$	AALTONEN	14B CDF	$p\bar{p}$ at 1.96 TeV
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
$1.575 \pm 0.019 \pm 0.014$	<sup>1</sup> AAIJ	24AJ LHCb	$pp$ at 13 TeV
$1.599 \pm 0.041 \pm 0.022$	<sup>4</sup> AAIJ	14BJ LHCb	$pp$ at 7, 8 TeV
$1.56^{+0.27}_{-0.25} \pm 0.02$	<sup>5</sup> AALTONEN	09AP CDF	Repl. by AALTONEN 14B

<sup>1</sup> Reconstructed in  $\Xi_b^- \rightarrow \Xi_c^0 \pi^-, \Xi_c^0 \rightarrow p K^- K^- \pi^+$  decays. Reference  $\Lambda_b^0$  lifetime  $1.464 \pm 0.010$  ps from PDG 22.

<sup>2</sup> Supersedes AAIJ 14BJ and AAIJ 24AJ.

<sup>3</sup> Measured in  $\Xi_b^- \rightarrow J/\psi \Xi^-$  decays.

<sup>4</sup> Reconstructed in  $\Xi_b^- \rightarrow \Xi_c^0 \pi^-, \Xi_c^0 \rightarrow p K^- K^- \pi^+$  decays. Reference  $\Lambda_b^0$  lifetime  $1.479 \pm 0.009 \pm 0.010$  ps from AAIJ 14U.

<sup>5</sup> Measured in  $\Xi_b^- \rightarrow J/\psi \Xi^-$  decays with  $66^{+14}_{-9}$  candidates.

**MEAN LIFE RATIOS** **$\tau_{\Xi_b^-} / \tau_{\Lambda_b^0}$  mean life ratio**

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b><math>1.078 \pm 0.012 \pm 0.007</math></b>	<sup>1,2</sup> AAIJ	24AJ LHCb	$pp$ at 7, 8, 13 TeV
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
$1.076 \pm 0.013 \pm 0.006$	<sup>1</sup> AAIJ	24AJ LHCb	$pp$ at 13 TeV
$1.089 \pm 0.026 \pm 0.011$	<sup>1</sup> AAIJ	14BJ LHCb	$pp$ at 7, 8 TeV

<sup>1</sup> Reconstructed in  $\Xi_b^- \rightarrow \Xi_c^0 \pi^-, \Xi_c^0 \rightarrow p K^- K^- \pi^+$  decays. Used  $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$  for normalization.

<sup>2</sup> Supersedes AAIJ 14BJ and AAIJ 24AJ.

 **$\tau_{\Xi_b^-} / \tau_{\Xi_b^0}$  mean life ratio**

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b><math>1.083 \pm 0.032 \pm 0.016</math></b>	<sup>1</sup> AAIJ	14BJ LHCb	$pp$ at 7, 8 TeV

<sup>1</sup> Reconstructed in  $\Xi_b^- \rightarrow \Xi_c^0 \pi^-, \Xi_c^0 \rightarrow p K^- K^- \pi^+$  decays. Uses  $\Xi_b^0$  measurements from AAIJ 14Z.

## $\Xi_b^-$ DECAY MODES

Mode	Fraction ( $\Gamma_i/\Gamma$ )	Confidence level
$\Gamma_1$ $J/\psi \Xi^- \times B(b \rightarrow \Xi_b^-)$	$(1.0 \pm 0.4) \times 10^{-5}$	
$\Gamma_2$ $J/\psi \Lambda K^- \times B(b \rightarrow \Xi_b^-)$	$(2.3 \pm 0.7) \times 10^{-6}$	
$\Gamma_3$ $p K^- K^- \times B(b \rightarrow \Xi_b^-)$	$(3.7 \pm 0.8) \times 10^{-8}$	
$\Gamma_4$ $p K^- K^-$	$(2.3 \pm 0.9) \times 10^{-6}$	
$\Gamma_5$ $p \pi^- \pi^-$	$< 1.3 \times 10^{-6}$	90%
$\Gamma_6$ $p K^- \pi^-$	$(2.3 \pm 1.1) \times 10^{-6}$	
$\Gamma_7$ $\Lambda_b^0 \pi^- \times B(b \rightarrow \Xi_b^-)/B(b \rightarrow \Lambda_b^0)$	$(7.0 \pm 0.9) \times 10^{-4}$	
$\Gamma_8$ $\Xi_c^0 \pi^-$	seen	
$\Gamma_9$ $\Xi_c^0 D_s^- \times B(b \rightarrow \Xi_b^-)/B(b \rightarrow \Lambda_b^0)$	$(1.9 \pm 0.5) \times 10^{-3}$	
$\Gamma_{10}$ $\Sigma(1385) K^-$	$(2.6 \pm 2.3) \times 10^{-7}$	
$\Gamma_{11}$ $\Lambda(1405) K^-$	$(1.9 \pm 1.2) \times 10^{-7}$	
$\Gamma_{12}$ $\Lambda(1520) K^-$	$(7.6 \pm 3.2) \times 10^{-7}$	
$\Gamma_{13}$ $\Lambda(1670) K^-$	$(4.5 \pm 2.3) \times 10^{-7}$	
$\Gamma_{14}$ $\Sigma(1775) K^-$	$(2.2 \pm 1.5) \times 10^{-7}$	
$\Gamma_{15}$ $\Sigma(1915) K^-$	$(2.6 \pm 2.5) \times 10^{-7}$	
$\Gamma_{16}$ $\Lambda_c^+ K^- \pi^-$		
$\Gamma_{17}$ $\Lambda_c^+ K^- K^-$		
$\Gamma_{18}$ $\Lambda_c^+ \pi^- \pi^-$		
$\Gamma_{19}$ $J/\psi \Xi^-$	seen	
$\Gamma_{20}$ $\psi(2S) \Xi^-$	seen	
$\Gamma_{21}$ $\Xi^- \gamma$	$< 1.3 \times 10^{-4}$	95%

## $\Xi_b^-$ BRANCHING RATIOS

$\Gamma(J/\psi \Xi^- \times B(b \rightarrow \Xi_b^-))/\Gamma_{\text{total}}$	$\Gamma_1/\Gamma$
<u>VALUE (units <math>10^{-4}</math>)</u>	<u>DOCUMENT ID</u>
<u>OUR AVERAGE</u>	<u>TECN</u>
<u>COMMENT</u>	

**0.10 ± 0.04 OUR AVERAGE**

0.098<sup>+0.023</sup><sub>-0.016</sub> ± 0.035

<sup>1</sup> AALTONEN 09AP CDF  $p\bar{p}$  at 1.96 TeV

0.16 ± 0.07 ± 0.06

<sup>2</sup> ABAZOV 07K D0  $p\bar{p}$  at 1.96 TeV

<sup>1</sup> AALTONEN 09AP reports  $[\Gamma(\Xi_b^- \rightarrow J/\psi \Xi^- \times B(b \rightarrow \Xi_b^-))/\Gamma_{\text{total}}] / [B(\Lambda_b^0 \rightarrow J/\psi(1S)\Lambda)] / [B(\bar{b} \rightarrow b\text{-baryon at } p\bar{p})] = 0.167^{+0.037}_{-0.025} \pm 0.012$  which we multiply by our best (shown rounded) values  $B(\Lambda_b^0 \rightarrow J/\psi(1S)\Lambda) = (3.0 \pm 0.8) \times 10^{-4}$ ,  $B(\bar{b} \rightarrow b\text{-baryon at } p\bar{p}) = (19.8 \pm 4.6) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values.

<sup>2</sup> ABAZOV 07K reports  $[\Gamma(\Xi_b^- \rightarrow J/\psi \Xi^- \times B(b \rightarrow \Xi_b^-))/\Gamma_{\text{total}}] / [B(\Lambda_b^0 \rightarrow J/\psi(1S)\Lambda)] / [B(\bar{b} \rightarrow b\text{-baryon at } p\bar{p})] = 0.28 \pm 0.09^{+0.09}_{-0.08}$  which we multiply by our best (shown rounded) values  $B(\Lambda_b^0 \rightarrow J/\psi(1S)\Lambda) = (3.0 \pm 0.8) \times 10^{-4}$ ,  $B(\bar{b} \rightarrow b\text{-baryon at } p\bar{p}) = (19.8 \pm 4.6) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values.

$\Gamma(J/\psi \Lambda K^- \times B(b \rightarrow \Xi_b^-))/\Gamma_{\text{total}}$   $\Gamma_2/\Gamma$ 

VALUE (units $10^{-6}$ )	DOCUMENT ID	TECN	COMMENT
<b>2.3±0.2±0.6</b>	1,2 AAIJ	17BE LHCB	$pp$ at 7 and 8 TeV

<sup>1</sup> AAIJ 17BE reports  $[\Gamma(\Xi_b^- \rightarrow J/\psi \Lambda K^- \times B(b \rightarrow \Xi_b^-))/\Gamma_{\text{total}}] / [B(\Lambda_b^0 \rightarrow J/\psi(1S) \Lambda)] / [B(\bar{b} \rightarrow b\text{-baryon at } pp)] = (4.19 \pm 0.29 \pm 0.15) \times 10^{-2}$  which we multiply by our best (shown rounded) values  $B(\Lambda_b^0 \rightarrow J/\psi(1S) \Lambda) = (3.0 \pm 0.8) \times 10^{-4}$ ,  $B(\bar{b} \rightarrow b\text{-baryon at } pp) = (18.7 \pm 1.1) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values.

<sup>2</sup> Integrated over the  $b$ -baryon transverse momentum  $p_T < 25$  GeV and rapidity  $2.0 < y < 4.5$ .

 $\Gamma(\rho K^- K^- \times B(b \rightarrow \Xi_b^-))/\Gamma_{\text{total}}$   $\Gamma_3/\Gamma$ 

VALUE (units $10^{-8}$ )	DOCUMENT ID	TECN	COMMENT
<b>3.7±0.8±0.2</b>	<sup>1</sup> AAIJ	17F LHCB	$pp$ at 7, 8 TeV

<sup>1</sup> AAIJ 17F reports  $[\Gamma(\Xi_b \rightarrow \rho K^- K^- \times B(\bar{b} \rightarrow \Xi_b))/\Gamma_{\text{total}}] / [B(B^+ \rightarrow K^+ K^- K^+)] / [B(\bar{b} \rightarrow B^+ \text{ at } Z)] = (2.65 \pm 0.35 \pm 0.47) \times 10^{-3}$  which we multiply by our best (shown rounded) values  $B(B^+ \rightarrow K^+ K^- K^+) = (3.40 \pm 0.14) \times 10^{-5}$ ,  $B(\bar{b} \rightarrow B^+ \text{ at } Z) = (40.8 \pm 0.7) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values.

 $\Gamma(\rho K^- K^-)/\Gamma_{\text{total}}$   $\Gamma_4/\Gamma$ 

VALUE (units $10^{-6}$ )	DOCUMENT ID	TECN	COMMENT
<b>2.3±0.9</b>	1,2 AAIJ	21AH LHCB	$pp$ at 7, 8, 13 TeV

<sup>1</sup> Obtained using the ratio of fragmentation and branching fractions relative to the  $B^- \rightarrow K^+ K^- K^-$  decay.

<sup>2</sup> The ratio of  $f_{\Xi_b^-}/f_{\Lambda_b^0}$  was used as input obtained from AAIJ 19AB.

 $\Gamma(\rho \pi^- \pi^-)/\Gamma(\rho K^- K^-)$   $\Gamma_5/\Gamma_4$ 

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<b>&lt;0.56</b>	90	<sup>1</sup> AAIJ	17F LHCB	$pp$ at 7, 8 TeV

<sup>1</sup> Measures the ratio as  $0.28 \pm 0.16 \pm 0.13$ .

 $\Gamma(\rho K^- \pi^-)/\Gamma(\rho K^- K^-)$   $\Gamma_6/\Gamma_4$ 

VALUE	DOCUMENT ID	TECN	COMMENT
<b>0.98±0.27±0.09</b>	AAIJ	17F LHCB	$pp$ at 7, 8 TeV

 $\Gamma(\Lambda_b^0 \pi^- \times B(b \rightarrow \Xi_b^-))/B(b \rightarrow \Lambda_b^0)/\Gamma_{\text{total}}$   $\Gamma_7/\Gamma$ 

VALUE (units $10^{-4}$ )	DOCUMENT ID	TECN	COMMENT
<b>7.0±0.9 OUR AVERAGE</b>			

7.3±0.8±0.6 <sup>1</sup> AAIJ 23AV LHCB  $pp$  at 13 TeV

5.7±1.8<sup>+0.8</sup><sub>-0.9</sub> <sup>2</sup> AAIJ 15BA LHCB  $pp$  at 7, 8 TeV

<sup>1</sup> Measured in the decay chain of  $\Xi_b^- \rightarrow \Lambda_b^0 \pi^-$ ,  $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$  and  $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^- \pi^+ \pi^-$ , with  $\Lambda_c^+ \rightarrow \rho K^- \pi^+$ .

<sup>2</sup> A signal is reported with a significance of 3.2 standard deviations in the decay chain of  $\Xi_b^- \rightarrow \Lambda_b^0 \pi^-$ ,  $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$ , and  $\Lambda_c^+ \rightarrow \rho K^- \pi^+$ .

$\Gamma(\Xi_c^0 \pi^-)/\Gamma_{\text{total}}$   $\Gamma_8/\Gamma$ 

VALUE	DOCUMENT ID	TECN	COMMENT
<b>seen</b>	AAIJ	160	LHCB $pp$ at 7, 8 TeV

 $\Gamma(\Xi_c^0 D_s^- \times B(b \rightarrow \Xi_b^-))/B(b \rightarrow \Lambda_b^0)/\Gamma_{\text{total}}$   $\Gamma_9/\Gamma$ 

VALUE (units $10^{-3}$ )	DOCUMENT ID	TECN	COMMENT
<b><math>1.9 \pm 0.5 \pm 0.2</math></b>	<sup>1</sup> AAIJ	24v	LHCB $pp$ at 13 TeV

<sup>1</sup> AAIJ 24v reports  $[\Gamma(\Xi_b^- \rightarrow \Xi_c^0 D_s^- \times B(b \rightarrow \Xi_b^-))/B(b \rightarrow \Lambda_b^0)] / [B(\Lambda_b^0 \rightarrow \Lambda_c^+ D_s^-)] = (16.9 \pm 1.3 \pm 4.4) \times 10^{-2}$  which we multiply by our best (shown rounded) value  $B(\Lambda_b^0 \rightarrow \Lambda_c^+ D_s^-) = (1.10 \pm 0.10) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

 $\Gamma(\Sigma(1385) K^-)/\Gamma_{\text{total}}$   $\Gamma_{10}/\Gamma$ 

VALUE (units $10^{-6}$ )	DOCUMENT ID	TECN	COMMENT
<b><math>0.26 \pm 0.11 \pm 0.20</math></b>	<sup>1,2</sup> AAIJ	21AH	LHCB $pp$ at 7, 8 and 13 TeV

<sup>1</sup> Obtained from an amplitude analysis of quasi-two-body contributions to the  $\Xi_b^- \rightarrow RK^-$  decay, with  $R \rightarrow pK^-$ .

<sup>2</sup> The ratio of  $f_{\Xi_b^-}/f_{\Lambda_b^0}$  was used as input obtained from AAIJ 19AB.

 $\Gamma(\Lambda(1405) K^-)/\Gamma_{\text{total}}$   $\Gamma_{11}/\Gamma$ 

VALUE (units $10^{-6}$ )	DOCUMENT ID	TECN	COMMENT
<b><math>0.19 \pm 0.06 \pm 0.10</math></b>	<sup>1,2</sup> AAIJ	21AH	LHCB $pp$ at 7, 8 and 13 TeV

<sup>1</sup> Obtained from an amplitude analysis of quasi-two-body contributions to the  $\Xi_b^- \rightarrow RK^-$  decay, with  $R \rightarrow pK^-$ .

<sup>2</sup> The ratio of  $f_{\Xi_b^-}/f_{\Lambda_b^0}$  was used as input obtained from AAIJ 19AB.

 $\Gamma(\Lambda(1520) K^-)/\Gamma_{\text{total}}$   $\Gamma_{12}/\Gamma$ 

VALUE (units $10^{-6}$ )	DOCUMENT ID	TECN	COMMENT
<b><math>0.76 \pm 0.09 \pm 0.31</math></b>	<sup>1,2</sup> AAIJ	21AH	LHCB $pp$ at 7, 8 and 13 TeV

<sup>1</sup> Obtained from an amplitude analysis of quasi-two-body contributions to the  $\Xi_b^- \rightarrow RK^-$  decay, with  $R \rightarrow pK^-$ .

<sup>2</sup> The ratio of  $f_{\Xi_b^-}/f_{\Lambda_b^0}$  was used as input obtained from AAIJ 19AB.

 $\Gamma(\Lambda(1670) K^-)/\Gamma_{\text{total}}$   $\Gamma_{13}/\Gamma$ 

VALUE (units $10^{-6}$ )	DOCUMENT ID	TECN	COMMENT
<b><math>0.45 \pm 0.07 \pm 0.22</math></b>	<sup>1,2</sup> AAIJ	21AH	LHCB $pp$ at 7, 8 and 13 TeV

<sup>1</sup> Obtained from an amplitude analysis of quasi-two-body contributions to the  $\Xi_b^- \rightarrow RK^-$  decay, with  $R \rightarrow pK^-$ .

<sup>2</sup> The ratio of  $f_{\Xi_b^-}/f_{\Lambda_b^0}$  was used as input obtained from AAIJ 19AB.

$\Gamma(\Sigma(1775)K^-)/\Gamma_{\text{total}}$   $\Gamma_{14}/\Gamma$

VALUE (units $10^{-6}$ )	DOCUMENT ID	TECN	COMMENT
<b>0.22±0.08±0.13</b>	1,2 AAIJ	21AH LHCB	$pp$ at 7, 8 and 13 TeV

<sup>1</sup> Obtained from an amplitude analysis of quasi-two-body contributions to the  $\Xi_b^- \rightarrow RK^-$  decay, with  $R \rightarrow pK^-$ .

<sup>2</sup> The ratio of  $f_{\Xi_b^-}/f_{\Lambda_b^0}$  was used as input obtained from AAIJ 19AB.

$\Gamma(\Sigma(1915)K^-)/\Gamma_{\text{total}}$   $\Gamma_{15}/\Gamma$

VALUE (units $10^{-6}$ )	DOCUMENT ID	TECN	COMMENT
<b>0.26±0.09±0.23</b>	1,2 AAIJ	21AH LHCB	$pp$ at 7, 8 and 13 TeV

<sup>1</sup> Obtained from an amplitude analysis of quasi-two-body contributions to the  $\Xi_b^- \rightarrow RK^-$  decay, with  $R \rightarrow pK^-$ .

<sup>2</sup> The ratio of  $f_{\Xi_b^-}/f_{\Lambda_b^0}$  was used as input obtained from AAIJ 19AB.

$\Gamma(\Lambda_c^+ K^- K^-)/\Gamma(\Lambda_c^+ K^- \pi^-)$   $\Gamma_{17}/\Gamma_{16}$

VALUE (units $10^{-2}$ )	DOCUMENT ID	TECN	COMMENT
<b>4.5±1.1±0.5</b>	AAIJ	24T LHCB	$pp$ at 7, 8, 13 TeV

$\Gamma(\Lambda_c^+ \pi^- \pi^-)/\Gamma(\Lambda_c^+ K^- \pi^-)$   $\Gamma_{18}/\Gamma_{16}$

VALUE	DOCUMENT ID	TECN	COMMENT
<b>&lt;6.5 × 10<sup>-2</sup></b>	AAIJ	24T LHCB	$pp$ at 7, 8, 13 TeV

$\Gamma(\psi(2S)\Xi^-)/\Gamma(J/\psi\Xi^-)$   $\Gamma_{20}/\Gamma_{19}$

VALUE	DOCUMENT ID	TECN	COMMENT
<b>0.84<sup>+0.21</sup><sub>-0.19</sub>±0.10±0.02</b>	<sup>1</sup> HAYRAPETY...24R	CMS	$pp$ at 13 TeV

<sup>1</sup> HAYRAPETYAN 24R value last uncertainty comes from the uncertainties in the branching fractions of the charmonium states.

$\Gamma(\Xi^- \gamma)/\Gamma_{\text{total}}$   $\Gamma_{21}/\Gamma$

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<b>&lt;1.3 × 10<sup>-4</sup></b>	95	<sup>1</sup> AAIJ	22F LHCB	$pp$ at 13 TeV

<sup>1</sup> Used  $\Xi_b^- \rightarrow \Xi^- J/\psi$  as normalization and an integrated luminosity of 5.4 fb<sup>-1</sup>.

**P VIOLATION ASYMMETRY**

**$A_P(\Xi_b), \Xi_b^- - \Xi_b^+$  production asymmetry**

$$A_P(\Xi_b) = [\sigma(\Xi_b^-) - \sigma(\Xi_b^+)] / [\sigma(\Xi_b^-) + \sigma(\Xi_b^+)]$$

VALUE (units $10^{-2}$ )	DOCUMENT ID	TECN	COMMENT
<b>-2 ±4 OUR AVERAGE</b>			
1.1±5.6±1.9	1,2 AAIJ	19AB LHCB	$pp$ at 7 and 8 TeV
-3.9±4.9±2.5	1,2 AAIJ	19AB LHCB	$pp$ at 13 TeV

<sup>1</sup> Baryon kinematic range  $p_T < 20$  GeV/c and  $2 < \eta < 6$ .

<sup>2</sup> Measured using previous measurements of  $A_P(\Lambda_b)$  in AAIJ 17BF.

**CP VIOLATION in  $\Xi_b$  decays**

$$A_{CP}(\Xi_b) = [B(\Xi_b^- \rightarrow f) - B(\Xi_b^+ \rightarrow \bar{f})] / \text{Sum}$$

 **$A_{CP}(\Xi_b^- \rightarrow \Sigma(1385)K^-)$** 

<u>VALUE (units <math>10^{-2}</math>)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b><math>-27 \pm 34 \pm 73</math></b>	AAIJ	21AH LHCB	$pp$ at 7, 8, 13 TeV

 **$A_{CP}(\Xi_b^- \rightarrow \Lambda(1405)K^-)$** 

<u>VALUE (units <math>10^{-2}</math>)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b><math>-1 \pm 24 \pm 32</math></b>	AAIJ	21AH LHCB	$pp$ at 7, 8, 13 TeV

 **$A_{CP}(\Xi_b^- \rightarrow \Lambda(1520)K^-)$** 

<u>VALUE (units <math>10^{-2}</math>)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b><math>-5 \pm 9 \pm 8</math></b>	AAIJ	21AH LHCB	$pp$ at 7, 8, 13 TeV

 **$A_{CP}(\Xi_b^- \rightarrow \Lambda(1670)K^-)$** 

<u>VALUE (units <math>10^{-2}</math>)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b><math>3 \pm 14 \pm 10</math></b>	AAIJ	21AH LHCB	$pp$ at 7, 8, 13 TeV

 **$A_{CP}(\Xi_b^- \rightarrow \Sigma(1775)K^-)$** 

<u>VALUE (units <math>10^{-2}</math>)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b><math>-47 \pm 26 \pm 14</math></b>	AAIJ	21AH LHCB	$pp$ at 7, 8, 13 TeV

 **$A_{CP}(\Xi_b^- \rightarrow \Sigma(1915)K^-)$** 

<u>VALUE (units <math>10^{-2}</math>)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b><math>11 \pm 26 \pm 22</math></b>	AAIJ	21AH LHCB	$pp$ at 7, 8, 13 TeV

 **$\Xi_b^-$  REFERENCES**

AAIJ	24AJ	PR D110 072002	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	24T	JHEP 2408 132	R. Aaij	(LHCb Collab.)
AAIJ	24V	EPJ C84 237	R. Aaij <i>et al.</i>	(LHCb Collab.)
HAYRAPETY...	24R	PR D110 012002	A. Hayrapetyan <i>et al.</i>	(CMS Collab.)
AAIJ	23AV	PR D108 072002	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	22F	JHEP 2201 069	R. Aaij <i>et al.</i>	(LHCb Collab.)
PDG	22	PTEP 2022 083C01	R.L. Workman <i>et al.</i>	(PDG Collab.)
AAIJ	21	PR D103 012004	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	21AH	PR D104 052010	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	19AB	PR D99 052006	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	17BE	PL B772 265	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	17BF	PL B774 139	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	17F	PRL 118 071801	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	16O	PR D93 092007	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	15BA	PRL 115 241801	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	14AA	PRL 112 202001	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	14BJ	PRL 113 242002	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	14T	PL B736 154	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	14U	PL B734 122	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	14Z	PRL 113 032001	R. Aaij <i>et al.</i>	(LHCb Collab.)
AALTONEN	14B	PR D89 072014	T. Aaltonen <i>et al.</i>	(CDF Collab.)
AAIJ	13AV	PRL 110 182001	R. Aaij <i>et al.</i>	(LHCb Collab.)
AALTONEN	11X	PRL 107 102001	T. Aaltonen <i>et al.</i>	(CDF Collab.)
AALTONEN	09AP	PR D80 072003	T. Aaltonen <i>et al.</i>	(CDF Collab.)
AALTONEN	07A	PRL 99 052002	T. Aaltonen <i>et al.</i>	(CDF Collab.)

