

$\Xi_b(5945)^0$ 

$$J^P = \frac{3}{2}^+$$

Status: \*\*\*

Quantum numbers are based on quark model expectations.

 $\Xi_b(5945)^0$  MASS

| VALUE (MeV)                                                                                                                                                                                                                                                                                                                                                                   | DOCUMENT ID                  | TECN      | COMMENT                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------|-------------------------------------|
| <b>5952.3 ± 0.6 OUR AVERAGE</b>                                                                                                                                                                                                                                                                                                                                               |                              |           |                                     |
| 5952.4 ± 0.1 ± 0.6                                                                                                                                                                                                                                                                                                                                                            | <sup>1</sup> HAYRAPETY...24R | CMS       | $pp$ at 13 TeV                      |
| 5952.35 ± 0.02 ± 0.58                                                                                                                                                                                                                                                                                                                                                         | <sup>2,3</sup> AAIJ          | 23AU LHCB | $pp$ at 7, 8, 13 TeV                |
| 5952.3 ± 0.1 ± 0.6                                                                                                                                                                                                                                                                                                                                                            | <sup>4</sup> AAIJ            | 16AE LHCB | $pp$ at 7, 8 TeV                    |
| 5951.4 ± 0.8 ± 0.6                                                                                                                                                                                                                                                                                                                                                            | <sup>5</sup> CHATRCHYAN 12S  | CMS       | $pp$ at 7 TeV, 5.3 fb <sup>-1</sup> |
| <sup>1</sup> HAYRAPETYAN 24R measures $m(\Xi_b(5945)^0) - m(\Xi_b^-) - m(\pi^\pm) = 15.810 \pm 0.077 \pm 0.052$ MeV. We have adjusted the measurement to our best values of $m(\Xi_b^-) = 5797.0 \pm 0.6$ MeV, $m(\pi^\pm) = 139.57039 \pm 0.00018$ MeV. Our first error is their experiment's error and our second error is the systematic error from using our best values. |                              |           |                                     |
| <sup>2</sup> Measured using $\Xi_b(5945)^0 \rightarrow \Xi_b^- \pi^+$ , $\Xi_b^- \rightarrow \Xi_c^0 \pi^-$ , $\Xi_c^0 \rightarrow p K^- K^- \pi^+$ decays.                                                                                                                                                                                                                   |                              |           |                                     |
| <sup>3</sup> AAIJ 23AU measures $m(\Xi_b(5945)^0) - m(\Xi_b^-) - m(\pi^\pm) = 15.80 \pm 0.02 \pm 0.01$ MeV. We have adjusted the measurement to our best values of $m(\Xi_b^-) = 5797.0 \pm 0.6$ MeV, $m(\pi^\pm) = 139.57039 \pm 0.00018$ MeV. Our first error is their experiment's error and our second error is the systematic error from using our best values.          |                              |           |                                     |
| <sup>4</sup> AAIJ 16AE measures $m(\Xi_b(5945)^0) - m(\Xi_b^-) - m(\pi^\pm) = 15.727 \pm 0.068 \pm 0.023$ MeV. We have adjusted the measurement to our best values of $m(\Xi_b^-) = 5797.0 \pm 0.6$ MeV, $m(\pi^\pm) = 139.57039 \pm 0.00018$ MeV. Our first error is their experiment's error and our second error is the systematic error from using our best values.       |                              |           |                                     |
| <sup>5</sup> CHATRCHYAN 12S measures $m(\Xi_b(5945)^0) - m(\Xi_b^-) - m(\pi^\pm) = 14.84 \pm 0.74 \pm 0.28$ MeV. We have adjusted the measurement to our best values of $m(\Xi_b^-) = 5797.0 \pm 0.6$ MeV, $m(\pi^\pm) = 139.57039 \pm 0.00018$ MeV. Our first error is their experiment's error and our second error is the systematic error from using our best values.     |                              |           |                                     |

 $\Xi_b(5945)^0$  WIDTH

| VALUE (MeV)                                                                                                                                                 | DOCUMENT ID                 | TECN      | COMMENT                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------|-------------------------------------|
| <b>0.87 ± 0.07 OUR AVERAGE</b>                                                                                                                              |                             |           |                                     |
| 0.87 <sup>+0.22</sup> <sub>-0.20</sub> ± 0.16                                                                                                               | HAYRAPETY...24R             | CMS       | $pp$ at 13 TeV                      |
| 0.87 ± 0.06 ± 0.05                                                                                                                                          | <sup>1</sup> AAIJ           | 23AU LHCB | $pp$ at 7, 8, 13 TeV                |
| • • • We do not use the following data for averages, fits, limits, etc. • • •                                                                               |                             |           |                                     |
| 0.90 ± 0.16 ± 0.08                                                                                                                                          | <sup>1</sup> AAIJ           | 16AE LHCB | $pp$ at 7, 8 TeV                    |
| 2.1 ± 1.7                                                                                                                                                   | <sup>2</sup> CHATRCHYAN 12S | CMS       | $pp$ at 7 TeV, 5.3 fb <sup>-1</sup> |
| <sup>1</sup> Measured using $\Xi_b(5945)^0 \rightarrow \Xi_b^- \pi^+$ , $\Xi_b^- \rightarrow \Xi_c^0 \pi^-$ , $\Xi_c^0 \rightarrow p K^- K^- \pi^+$ decays. |                             |           |                                     |
| <sup>2</sup> Systematic uncertainty not evaluated.                                                                                                          |                             |           |                                     |

$\Xi_b(5945)^0$  DECAY MODES

| Mode                           | Fraction ( $\Gamma_i/\Gamma$ ) |
|--------------------------------|--------------------------------|
| $\Gamma_1 \quad \Xi_b^- \pi^+$ | seen                           |

$\Xi_b(5945)^0$  BRANCHING RATIOS

| $\Gamma(\Xi_b^- \pi^+)/\Gamma_{\text{total}}$                                                                                                                                      |                              |           |                                     | $\Gamma_1/\Gamma$ |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------|-------------------------------------|-------------------|
| VALUE                                                                                                                                                                              | DOCUMENT ID                  | TECN      | COMMENT                             |                   |
| seen                                                                                                                                                                               | <sup>1</sup> HAYRAPETY...24R | CMS       | $pp$ at 13 TeV                      |                   |
| seen                                                                                                                                                                               | AAIJ                         | 16AE ATLS | $pp$ at 7, 8 TeV                    |                   |
| <b>seen</b>                                                                                                                                                                        | CHATRCHYAN 12S               | CMS       | $pp$ at 7 TeV, 5.3 fb <sup>-1</sup> |                   |
| <sup>1</sup> HAYRAPETYAN 24R measures $B(\Xi_b(5945)^0 \rightarrow \Xi_b^- \pi^+) \times B(b \rightarrow \Xi_b(5945)^0 X) / B(b \rightarrow \Xi_b^- X) = 0.22 \pm 0.02 \pm 0.02$ . |                              |           |                                     |                   |

$\Xi_b(5945)^0$  REFERENCES

|                  |                     |                              |                |
|------------------|---------------------|------------------------------|----------------|
| HAYRAPETY... 24R | PR D110 012002      | A. Hayrapetyan <i>et al.</i> | (CMS Collab.)  |
| AAIJ             | 23AU PRL 131 171901 | R. Aaij <i>et al.</i>        | (LHCb Collab.) |
| AAIJ             | 16AE JHEP 1605 161  | R. Aaij <i>et al.</i>        | (LHCb Collab.) |
| CHATRCHYAN 12S   | PRL 108 252002      | S. Chatrchyan <i>et al.</i>  | (CMS Collab.)  |