

# $\Sigma_c(2800)$

$$I(J^P) = 1(?^?) \quad \text{Status: } ***$$

Seen in the  $\Lambda_c^+ \pi^+$ ,  $\Lambda_c^+ \pi^0$ , and  $\Lambda_c^+ \pi^-$  mass spectra.

## $\Sigma_c(2800)$ MASSES

The charged ++ and + masses are obtained from the mass-difference measurements that follow. The neutral mass is dominated by the mass-difference measurement, but is pulled up somewhat by the less well-determined but considerably higher direct-mass measurement. It is possible, in fact, that AUBERT 08BN is seeing a different  $\Sigma_c$ .

### $\Sigma_c(2800)^{++}$ MASS

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>
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**$2801^{+4}_{-6}$  OUR FIT**

### $\Sigma_c(2800)^+$ MASS

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>
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**$2792^{+14}_{-5}$  OUR FIT**

### $\Sigma_c(2800)^0$ MASS

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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**$2806^{+5}_{-7}$  OUR FIT** Error includes scale factor of 1.3.

<b><math>2846 \pm 8 \pm 10</math></b>	AUBERT	08BN BABR	B <sup>-</sup> → $\bar{p} \Lambda_c^+ \pi^-$
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## $\Sigma_c(2800)$ MASS DIFFERENCES

### $m_{\Sigma_c(2800)^{++}} - m_{\Lambda_c^+}$

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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**$514^{+4}_{-6}$  OUR FIT**

<b><math>514.5^{+3.4+2.8}_{-3.1-4.9}</math></b>	$2810^{+1090}_{-775}$	MIZUK	05	BELL $e^+ e^- \approx \gamma(4S)$
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### $m_{\Sigma_c(2800)^+} - m_{\Lambda_c^+}$

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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**$505^{+14}_{-5}$  OUR FIT**

<b><math>505.4^{+5.8+12.4}_{-4.6-2.0}</math></b>	$1540^{+1750}_{-1050}$	MIZUK	05	BELL $e^+ e^- \approx \gamma(4S)$
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$$m_{\Sigma_c(2800)^0} - m_{\Lambda_c^+}$$

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>519</b> $^{+5}_{-7}$ <b>OUR FIT</b>				Error includes scale factor of 1.3.
<b>515.4</b> $^{+3.2+2.1}_{-3.1-6.0}$	2240 $^{+1300}_{-740}$	MIZUK	05	BELL $e^+e^- \approx \gamma(4S)$

### $\Sigma_c(2800)$ WIDTHS

#### $\Sigma_c(2800)^{++}$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>75</b> $^{+18+12}_{-13-11}$	2810 $^{+1090}_{-775}$	MIZUK	05	BELL $e^+e^- \approx \gamma(4S)$

#### $\Sigma_c(2800)^+$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>62</b> $^{+37+52}_{-23-38}$	1540 $^{+1750}_{-1050}$	MIZUK	05	BELL $e^+e^- \approx \gamma(4S)$

#### $\Sigma_c(2800)^0$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>72</b> $^{+22}_{-15}$ <b>OUR AVERAGE</b>				
86 $^{+33}_{-22} \pm 12$		AUBERT	08BN BABR	$B^- \rightarrow \bar{p}\Lambda_c^+\pi^-$
61 $^{+18+22}_{-13-13}$	2240 $^{+1300}_{-740}$	MIZUK	05	BELL $e^+e^- \approx \gamma(4S)$

### $\Sigma_c(2800)$ DECAY MODES

Mode	Fraction ( $\Gamma_j/\Gamma$ )
$\Gamma_1 \Lambda_c^+ \pi$	seen

### $\Sigma_c(2800)$ REFERENCES

AUBERT	08BN PR D78 112003	B. Aubert <i>et al.</i>	(BABAR Collab.)
MIZUK	05 PRL 94 122002	R. Mizuk <i>et al.</i>	(BELLE Collab.)