

$\Sigma_c(2800)$

$I(J^P) = 1(?^?)$ 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 Σ_c .

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

VALUE (MeV)	DOCUMENT ID
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2801^{+4}_{-6} OUR FIT

$\Sigma_c(2800)^+$ MASS

VALUE (MeV)	DOCUMENT ID
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2792^{+14}_{-5} OUR FIT

$\Sigma_c(2800)^0$ MASS

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

$2846 \pm 8 \pm 10$ AUBERT 08BN BABR $B^- \rightarrow \bar{p} \Lambda_c^+ \pi^-$

$\Sigma_c(2800)$ MASS DIFFERENCES

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

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
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514^{+4}_{-6} OUR FIT

$514.5^{+3.4+2.8}_{-3.1-4.9}$ 2810⁺¹⁰⁹⁰₋₇₇₅ MIZUK 05 BELL $e^+ e^- \approx \gamma(4S)$

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

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
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505^{+14}_{-5} OUR FIT

$505.4^{+5.8+12.4}_{-4.6-2.0}$ 1540⁺¹⁷⁵⁰₋₁₀₅₀ MIZUK 05 BELL $e^+ e^- \approx \gamma(4S)$

$m_{\Sigma_c(2800)^0} - m_{\Lambda_c^+}$					
VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT	
519 $^{+5}_{-7}$ OUR FIT	Error includes scale factor of 1.3.				
515.4 $^{+3.2+2.1}_{-3.1-6.0}$	2240 $^{+1300}_{-740}$	MIZUK	05	BELL	$e^+e^- \approx \gamma(4S)$

$\Sigma_c(2800)$ WIDTHS

$\Sigma_c(2800)^{++}$ WIDTH					
<u>VALUE (MeV)</u>		<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
75^{+18+12}_{-13-11}		2810^{+1090}_{-775}	MIZUK	05	BELL $e^+e^- \approx \Upsilon(4S)$
$\Sigma_c(2800)^+$ WIDTH					
<u>VALUE (MeV)</u>		<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
62^{+37+52}_{-23-38}		1540^{+1750}_{-1050}	MIZUK	05	BELL $e^+e^- \approx \Upsilon(4S)$
$\Sigma_c(2800)^0$ WIDTH					
<u>VALUE (MeV)</u>		<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
72^{+22}_{-15}		OUR AVERAGE			
$86^{+33}_{-22} \pm 12$			AUBERT	08BN BABR	$B^- \rightarrow \bar{p} \Lambda_c^+ \pi^-$
61^{+18+22}_{-13-13}		2240^{+1300}_{-740}	MIZUK	05	BELL $e^+e^- \approx \Upsilon(4S)$

$\Sigma_c(2800)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)
$\Gamma_1 \quad \Lambda_c^+ \pi$	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.)