

$\Sigma_c(2800)$

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

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 Σ_c .

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

| VALUE (MeV) | DOCUMENT ID |
|---|-------------|
| 2801⁺⁴₋₆ OUR FIT | |

$\Sigma_c(2800)^+$ MASS

| VALUE (MeV) | DOCUMENT ID |
|--|-------------|
| 2792⁺¹⁴₋₅ OUR FIT | |

$\Sigma_c(2800)^0$ MASS

| VALUE (MeV) | DOCUMENT ID | TECN | COMMENT |
|--|-------------------------------------|-----------|---|
| 2806⁺⁵₋₇ OUR FIT | Error includes scale factor of 1.3. | | |
| 2846\pm8\pm10 | 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 |
|--|---------------------------------------|-------------|------|-----------------------------------|
| 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 |
|---|--|-------------|------|-----------------------------------|
| 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 | $e^+e^- \approx \gamma(4S)$ |

$\Sigma_c(2800)^+$ 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 | $e^+e^- \approx \gamma(4S)$ |

$\Sigma_c(2800)^0$ 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 | $e^+e^- \approx \gamma(4S)$ |

$\Sigma_c(2800)$ DECAY MODES

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