

$\Xi(1950)$

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

We list here everything reported between 1875 and 2000 MeV. The accumulated evidence for a Ξ near 1950 MeV seems strong enough to include a $\Xi(1950)$ in the main Baryon Table, but not much can be said about its properties. In fact, there may be more than one Ξ near this mass.

$\Xi(1950)$ MASS

| <u>VALUE (MeV)</u> | <u>EVTS</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|-----------------------------|-------------|--------------------|-------------|---|
| 1950±15 OUR ESTIMATE | | | | |
| 1955± 6 | | ADAMOVICH 99B | WA89 | Σ^- nucleus, 345 GeV |
| 1944± 9 | 129 | BIAGI 87 | SPEC | $\Xi^- \text{Be} \rightarrow (\Xi^- \pi^+) \pi^- X$ |
| 1963± 5±2 | 63 | BIAGI 87C | SPEC | $\Xi^- \text{Be} \rightarrow (\Lambda \bar{K}^0) X$ |
| 1937± 7 | 150 | BIAGI 81 | SPEC | SPS hyperon beam |
| 1961±18 | 139 | BRIEFEL 77 | HBC | $2.87 K^- p \rightarrow \Xi^- \pi^+ X$ |
| 1936±22 | 44 | BRIEFEL 77 | HBC | $2.87 K^- p \rightarrow \Xi^0 \pi^- X$ |
| 1964±10 | 56 | BRIEFEL 77 | HBC | $\Xi(1530) \pi$ |
| 1900±12 | | DIBIANCA 75 | DBC | $\Xi \pi$ |
| 1952±11 | 25 | ROSS 73C | | $(\Xi \pi)^-$ |
| 1956± 6 | 29 | BADIER 72 | HBC | $\Xi \pi, \Xi \pi \pi, Y K$ |
| 1955±14 | 21 | GOLDWASSER 70 | HBC | $\Xi \pi$ |
| 1894±18 | 66 | DAUBER 69 | HBC | $\Xi \pi$ |
| 1930±20 | 27 | ALITTI 68 | HBC | $\Xi^- \pi^+$ |
| 1933±16 | 35 | BADIER 65 | HBC | $\Xi^- \pi^+$ |

$\Xi(1950)$ WIDTH

| <u>VALUE (MeV)</u> | <u>EVTS</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|---------------------------|-------------|--------------------|-------------|---|
| 60±20 OUR ESTIMATE | | | | |
| 68±22 | | ADAMOVICH 99B | WA89 | Σ^- nucleus, 345 GeV |
| 100±31 | 129 | BIAGI 87 | SPEC | $\Xi^- \text{Be} \rightarrow (\Xi^- \pi^+) \pi^- X$ |
| 25±15±1.2 | 63 | BIAGI 87C | SPEC | $\Xi^- \text{Be} \rightarrow (\Lambda \bar{K}^0) X$ |
| 60± 8 | 150 | BIAGI 81 | SPEC | SPS hyperon beam |
| 159±57 | 139 | BRIEFEL 77 | HBC | $2.87 K^- p \rightarrow \Xi^- \pi^+ X$ |
| 87±26 | 44 | BRIEFEL 77 | HBC | $2.87 K^- p \rightarrow \Xi^0 \pi^- X$ |
| 60±39 | 56 | BRIEFEL 77 | HBC | $\Xi(1530) \pi$ |
| 63±78 | | DIBIANCA 75 | DBC | $\Xi \pi$ |
| 38±10 | | ROSS 73C | | $(\Xi \pi)^-$ |
| 35±11 | 29 | BADIER 72 | HBC | $\Xi \pi, \Xi \pi \pi, Y K$ |
| 56±26 | 21 | GOLDWASSER 70 | HBC | $\Xi \pi$ |
| 98±23 | 66 | DAUBER 69 | HBC | $\Xi \pi$ |
| 80±40 | 27 | ALITTI 68 | HBC | $\Xi^- \pi^+$ |
| 140±35 | 35 | BADIER 65 | HBC | $\Xi^- \pi^+$ |

$\Xi(1950)$ DECAY MODES

| Mode | Fraction (Γ_i/Γ) |
|---|--------------------------------|
| $\Gamma_1 \Lambda \bar{K}$ | seen |
| $\Gamma_2 \Sigma \bar{K}$ | possibly seen |
| $\Gamma_3 \Xi \pi$ | seen |
| $\Gamma_4 \Xi(1530) \pi$ | |
| $\Gamma_5 \Xi \pi \pi$ (not $\Xi(1530) \pi$) | |

$\Xi(1950)$ BRANCHING RATIOS

| $\Gamma(\Sigma \bar{K})/\Gamma(\Lambda \bar{K})$ | | | | | | Γ_2/Γ_1 |
|--|-----|------|-------------|------|---------|---------------------|
| VALUE | CL% | EVTs | DOCUMENT ID | TECN | COMMENT | |
| <2.3 | 90 | 0 | BIAGI | 87C | SPEC | Ξ^- Be 116 GeV |

| $\Gamma(\Sigma \bar{K})/\Gamma_{\text{total}}$ | | | | | | Γ_2/Γ |
|--|------|-------------|------|---------|-------------------|-------------------|
| VALUE | EVTs | DOCUMENT ID | TECN | COMMENT | | |
| possibly seen | 17 | HASSALL | 81 | HBC | $K^- p$ 6.5 GeV/c | |

| $\Gamma(\Xi \pi)/\Gamma(\Xi(1530) \pi)$ | | | | | | Γ_3/Γ_4 |
|---|-------------|------|-----|--|--|---------------------|
| VALUE | DOCUMENT ID | TECN | | | | |
| $2.8^{+0.7}_{-0.6}$ | APSELL | 70 | HBC | | | |

| $\Gamma(\Xi \pi \pi \text{ (not } \Xi(1530) \pi))/\Gamma(\Xi(1530) \pi)$ | | | | | | Γ_5/Γ_4 |
|--|-------------|------|-----|--|--|---------------------|
| VALUE | DOCUMENT ID | TECN | | | | |
| 0.0 ± 0.3 | APSELL | 70 | HBC | | | |

$\Xi(1950)$ REFERENCES

| | | | | |
|------------|-----|--------------------------|-------------------------------------|----------------------|
| ADAMOVICH | 99B | EPJ C11 271 | M.I. Adamovich <i>et al.</i> | (CERN WA89 Collab.) |
| BIAGI | 87 | ZPHY C34 15 | S.F. Biagi <i>et al.</i> | (BRIS, CERN, GEVA+) |
| BIAGI | 87C | ZPHY C34 175 | S.F. Biagi <i>et al.</i> | (BRIS, CERN, GEVA+) |
| BIAGI | 81 | ZPHY C9 305 | S.F. Biagi <i>et al.</i> | (BRIS, CAVE, GEVA+) |
| HASSALL | 81 | NP B189 397 | J.K. Hassall <i>et al.</i> | (CAVE, MSU) |
| BRIEFEL | 77 | PR D16 2706 | E. Briefel <i>et al.</i> | (BRAN, UMD, SYRA+) |
| | | Also Duke Conf. 317 | E. Briefel <i>et al.</i> | (BRAN, UMD, SYRA+) |
| | | Hyperon Resonances, 1970 | | |
| DIBIANCA | 75 | NP B98 137 | F.A. Dibianca, R.J. Endorf | (CMU) |
| ROSS | 73C | Purdue Conf. 345 | R.T. Ross, J.L. Lloyd, D. Radojicic | (OXF) |
| BADIER | 72 | NP B37 429 | J. Badier <i>et al.</i> | (EPOL) |
| APSELL | 70 | PRL 24 777 | S.P. Apsell <i>et al.</i> | (BRAN, UMD, SYRA+) I |
| GOLDWASSER | 70 | PR D1 1960 | E.L. Goldwasser, P.F. Schultz | (ILL) |
| DAUBER | 69 | PR 179 1262 | P.M. Dauber <i>et al.</i> | (LRL) I |
| ALITTI | 68 | PRL 21 1119 | J. Alitti <i>et al.</i> | (BNL, SYRA) I |
| BADIER | 65 | PL 16 171 | J. Badier <i>et al.</i> | (EPOL, SACL, AMST) I |