**$\Gamma(\Xi\pi\pi(\text{not}\,\Xi(1530)\pi))/\Gamma(\Lambda\overline{K})$** **$\Gamma_5/\Gamma_1$**

| VALUE | DOCUMENT ID | | TECN | CHG | COMMENT |
|---|---|---|---|---|---|
| **0.30±0.20** | BIAGI | 87 | SPEC | – | $\Xi^-$ Be 116 GeV |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | | |
| <0.14 | [7] BADIER | 65 | HBC | 0 | 1 st. dev. limit |
| >0.1 | SMITH | 65C | HBC | –0 | $K^- p$ 2.45–2.7 GeV/$c$ |

**$\Gamma(\Xi\pi\pi(\text{not}\,\Xi(1530)\pi))/\Gamma(\Xi(1530)\pi)$** **$\Gamma_5/\Gamma_4$**

| VALUE | DOCUMENT ID | | TECN | CHG | COMMENT |
|---|---|---|---|---|---|
| consistent with zero | GAY | 76C | HBC | – | $K^- p$ 4.2 GeV/$c$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | | |
| 0.3±0.5 | [8] APSELL | 70 | HBC | 0 | $K^- p$ 2.87 GeV/$c$ |

## $\Xi(1820)$ FOOTNOTES

[1] BIAGI 87 also sees weak signals in the in the $\Xi^-\pi^+\pi^-$ channel at 1782.6 ± 1.4 MeV ($\Gamma$ = 6.0 ± 1.5 MeV) and 1831.9 ± 2.8 MeV ($\Gamma$ = 9.6 ± 9.9 MeV).

[2] BADIER 72 adds all channels and divides the peak into lower and higher mass regions. The data can also be fitted with a single Breit-Wigner of mass 1800 MeV and width 150 MeV.

[3] From a fit to inclusive $\Xi\pi$, $\Xi\pi\pi$, and $\Lambda K^-$ spectra.

[4] From a fit to inclusive $\Xi\pi$ and $\Xi\pi\pi$ spectra only.

[5] Including $\Xi\pi\pi$.

[6] DAUBER 69 uses in part the same data as SMITH 65C.

[7] For the decay mode $\Xi^-\pi^+\pi^0$ only. This limit includes $\Xi(1530)\pi$.

[8] Or less. Upper limit for the 3-body decay.

## $\Xi(1820)$ REFERENCES


BIAGI 87 ZPHY C34 15 + (BRIS, CERN, GEVA, HEIDP, LAUS, LOQM, RAL)
BIAGI 87C ZPHY C34 175 + (BRIS, CERN, GEVA, HEIDP, LAUS, LOQM, RAL) JP
ASTON 85B PR D32 2270 +Carnegie+ (SLAC, CARL, CNRC, CINC)
JENKINS 83 PRL 51 951 +Albright, Diamond+ (FSU, BRAN, LBL, CINC, MASD)
BIAGI 81 ZPHY C9 305 + (BRIS, CAVE, GEVA, HEIDP, LAUS, LOQM, RHEL)
HASSALL 81 NP B189 397 +Ansorge, Carter, Neale+ (CAVE, MSU)
TEODORO 78 PL 77B 451 +Diaz, Dionisi, Blokzijl+ (AMST, CERN, NIJM, OXF) JP
BRIEFEL 77 PR D16 2706 +Gourevitch, Chang+ (BRAN, UMD, SYRA, TUFTS)
Also 69 PRL 23 884 Apsell+ (BRAN, UMD, SYRA, TUFTS)
GAY 76 NC 31A 593 +Jeanneret, Bogdanski+ (NEUC, LAUS, LIVP, CURIN)
GAY 76C PL 62B 477 +Armenteros, Berge+ (AMST, CERN, NIJM) IJ
DIBIANCA 75 NP B98 137 +Endorf (CMU)
BADIER 72 NP B37 429 +Barrelet, Charlton, Videau (EPOL)
APSELL 70 PRL 24 777 + (BRAN, UMD, SYRA, TUFTS) I
CRENNELL 70B PR D1 847 +Karshon, Lai, O'Neall, Scarr, Schumann (BNL)
ALITTI 69 PRL 22 79 +Barnes, Flaminio, Metzger+ (BNL, SYRA) I
DAUBER 69 PR 179 1262 +Berge, Hubbard, Merrill, Miller (LRL)
TRIPP 67 NP B3 10 +Leith+ (LRL, SLAC, CERN, HEID, SACL)
BADIER 65 PL 16 171 +Demoulin, Goldberg+ (EPOL, SACL, AMST) I
SMITH 65B Athens Conf. 251 +Lindsey (LRL)
SMITH 65C PRL 14 25 +Lindsey, Button-Shafer, Murray (LRL) IJP
HALSTEINSLID 63 Siena Conf. 1 73 + (BERG, CERN, EPOL, RHEL, LOUC) I


## OTHER RELATED PAPERS


TEODORO 78 PL 77B 451 +Diaz, Dionisi, Blokzijl+ (AMST, CERN, NIJM, OXF) JP
BRIEFEL 75 PR D12 1859 +Gourevitch+ (BRAN, UMD, SYRA, TUFTS)
SCHMIDT 73 Purdue Conf. 363 (BRAN)
MERRILL 68 PR 167 1202 +Shafer (LRL)
SMITH 64 PRL 13 61 +Lindsey, Murray, Button-Shafer+ (LRL) IJP


# $\Xi(1950)$

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

We list here everything reported between 1875 and 2000 MeV. The accumulated evidence for a $\Xi$ 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 $\Xi$ near this mass.

## $\Xi(1950)$ MASS

| VALUE (MeV) | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| **1950±15 OUR ESTIMATE** | | | | | |
| 1944± 9 | 129 | BIAGI | 87 | SPEC | $\Xi^-$ Be → $(\Xi^-\pi^+)\pi^-$X |
| 1963± 5±2 | 63 | BIAGI | 87C | SPEC | $\Xi^-$ Be → $(\Lambda\overline{K}^0)$ X |
| 1937± 7 | 150 | BIAGI | 81 | SPEC | SPS hyperon beam |
| 1961±18 | 139 | BRIEFEL | 77 | HBC | 2.87 $K^- p \to \Xi^-\pi^+$X |
| 1936±22 | 44 | BRIEFEL | 77 | HBC | 2.87 $K^- p \to \Xi^0\pi^-$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 | $\Xi\pi$, $\Xi\pi\pi$, $YK$ |
| 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

| VALUE (MeV) | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| **60±20 OUR ESTIMATE** | | | | | |
| 100±31 | 129 | BIAGI | 87 | SPEC | $\Xi^-$ Be → $(\Xi^-\pi^+)\pi^-$X |
| 25±15±1.2 | 63 | BIAGI | 87C | SPEC | $\Xi^-$ Be → $(\Lambda\overline{K}^0)$ X |
| 60± 8 | 150 | BIAGI | 81 | SPEC | SPS hyperon beam |
| 159±57 | 139 | BRIEFEL | 77 | HBC | 2.87 $K^- p \to \Xi^-\pi^+$X |
| 87±26 | 44 | BRIEFEL | 77 | HBC | 2.87 $K^- p \to \Xi^0\pi^-$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 | $\Xi\pi$, $\Xi\pi\pi$, $YK$ |
| 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 ($\Gamma_i/\Gamma$) |
|---|---|---|
| $\Gamma_1$ | $\Lambda\overline{K}$ | seen |
| $\Gamma_2$ | $\Sigma\overline{K}$ | possibly seen |
| $\Gamma_3$ | $\Xi\pi$ | seen |
| $\Gamma_4$ | $\Xi(1530)\pi$ | |
| $\Gamma_5$ | $\Xi\pi\pi(\text{not}\,\Xi(1530)\pi)$ | |

## $\Xi(1950)$ BRANCHING RATIOS

**$\Gamma(\Sigma\overline{K})/\Gamma(\Lambda\overline{K})$** **$\Gamma_2/\Gamma_1$**

| VALUE | CL% | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|---|
| <2.3 | 90 | 0 | BIAGI | 87C | SPEC | $\Xi^-$ Be 116 GeV |

**$\Gamma(\Sigma\overline{K})/\Gamma_{\text{total}}$** **$\Gamma_2/\Gamma$**

| VALUE | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| **possibly seen** | 17 | HASSALL | 81 | HBC | $K^- p$ 6.5 GeV/$c$ |

**$\Gamma(\Xi\pi)/\Gamma(\Xi(1530)\pi)$** **$\Gamma_3/\Gamma_4$**

| VALUE | DOCUMENT ID | | TECN |
|---|---|---|---|
| $2.8^{+0.7}_{-0.6}$ | APSELL | 70 | HBC |

**$\Gamma(\Xi\pi\pi(\text{not}\,\Xi(1530)\pi))/\Gamma(\Xi(1530)\pi)$** **$\Gamma_5/\Gamma_4$**

| VALUE | DOCUMENT ID | | TECN |
|---|---|---|---|
| 0.0±0.3 | APSELL | 70 | HBC |

## $\Xi(1950)$ REFERENCES


BIAGI 87 ZPHY C34 15 + (BRIS, CERN, GEVA, HEIDP, LAUS, LOQM, RAL)
BIAGI 87C ZPHY C34 175 + (BRIS, CERN, GEVA, HEIDP, LAUS, LOQM, RAL)
BIAGI 81 ZPHY C9 305 + (BRIS, CAVE, GEVA, HEIDP, LAUS, LOQM, RHEL)
HASSALL 81 NP B189 397 +Ansorge, Carter, Neale+ (CAVE, MSU)
BRIEFEL 77 PR D16 2706 +Gourevitch, Chang+ (BRAN, UMD, SYRA, TUFTS)
Also 70 Duke Conf. 317 Briefel+ (BRAN, UMD, SYRA, TUFTS)
DIBIANCA 75 NP B98 137 +Endorf (CMU)
ROSS 73C Purdue Conf. 345 +Lloyd, Radojicic (OXF)
BADIER 72 NP B37 429 +Barrelet, Charlton, Videau (EPOL)
APSELL 70 PRL 24 777 + (BRAN, UMD, SYRA, TUFTS) I
GOLDWASSER 70 PR D1 1960 +Schultz (ILL)
DAUBER 69 PR 179 1262 +Berge, Hubbard, Merrill, Miller (LRL) I
ALITTI 68 PRL 21 1119 +Flaminio, Metzger, Radojicic+ (BNL, SYRA) I
BADIER 65 PL 16 171 +Demoulin, Goldberg+ (EPOL, SACL, AMST) I


# $\Xi(2030)$

$I(J^P) = \frac{1}{2}(\geq\frac{5}{2}^?)$ Status: ∗∗∗

The evidence for this state has been much improved by HEMINGWAY 77, who see an eight standard deviation enhancement in $\Sigma\overline{K}$ and a weaker coupling to $\Lambda\overline{K}$. ALITTI 68 and HEMINGWAY 77 observe no signals in the $\Xi\pi\pi$ (or $\Xi(1530)\pi$) channel, in contrast to DIBIANCA 75. The decay $(\Lambda/\Sigma)\overline{K}\pi$ reported by BARTSCH 69 is also not confirmed by HEMINGWAY 77.

A moments analysis of the HEMINGWAY 77 data indicates at a level of three standard deviations that $J \geq 5/2$.

## $\Xi(2030)$ MASS

| VALUE (MeV) | EVTS | DOCUMENT ID | | TECN | CHG | COMMENT |
|---|---|---|---|---|---|---|
| **2025 ± 5 OUR ESTIMATE** | | | | | | |
| **2025.1± 2.4 OUR AVERAGE** | Error includes scale factor of 1.3. See the ideogram below. | | | | | |
| 2022 ± 7 | | JENKINS | 83 | MPS | – | $K^- p \to K^+$ MM |
| 2024 ± 2 | 200 | HEMINGWAY | 77 | HBC | – | $K^- p$ 4.2 GeV/$c$ |
| 2044 ± 8 | | DIBIANCA | 75 | DBC | –0 | $\Xi\pi\pi$, $\Xi^*\pi$ |
| 2019 ± 7 | 15 | ROSS | 73C | HBC | –0 | $\Sigma\overline{K}$ |
| 2030 ±10 | 42 | ALITTI | 69 | HBC | – | $K^- p$ 3.9–5 GeV/$c$ |
| 2058 ±17 | 40 | BARTSCH | 69 | HBC | –0 | $K^- p$ 10 GeV/$c$ |