Σ^0 REFERENCES

DEVLIN	86	PR D34 1626	+Petersen, Beretvas	(RUTG)
PETERSEN	86	PRL 57 949	+Beretvas, Devlin, Luk+	(RUTG, WISC, MICH, MINN)
DYDAK	77	NP B118 1	+Navarria, Overseth, Steffen+	(CERN, DORT, HEIDH)
COLAS	75	NP B91 253	+Farwell, Ferrer, Six	(ORSAY)
DOSCH	65	PL 14 239	+Engelmann, Filthuth, Hepp, Kluge+	(HEID)
SCHMIDT	65	PR 140B 1328		(COLU)
BURNSTEIN	64	PRL 13 66	+Day, Kehoe, Zorn, Snow	(UMD)
FEINBERG	58	PR 109 1019		(BNL)

Σ^-

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

We have omitted some results that have been superseded by later experiments. The omitted results may be found in our 1986 edition (Physics Letters **170B**) or in earlier editions.

Σ^- MASS

The fit uses Σ^+, Σ^0, Σ^-, and Λ mass and mass-difference measurements.

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
1197.436±0.033 OUR FIT	Error includes scale factor of 1.2.				
1197.45 ±0.04 OUR AVERAGE	Error includes scale factor of 1.2.				
1197.417±0.040		GUREV	93	SPEC	Σ^- C atom, crystal diff.
1197.532±0.057		GALL	88	CNTR	Σ^- Pb, Σ^- W atoms
1197.43 ±0.08	3000	SCHMIDT	65	HBC	See note with Λ mass
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1197.24 ±0.15		[1] DUGAN	75	CNTR	Exotic atoms

[1] GALL 88 concludes that the DUGAN 75 mass needs to be reevaluated.

$m_{\Sigma^-} - m_{\Sigma^+}$

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*
8.07±0.08 OUR FIT	Error includes scale factor of 1.9.			
8.09±0.16 OUR AVERAGE				
7.91±0.23	86	BOHM	72	EMUL
8.25±0.25	2500	DOSCH	65	HBC
8.25±0.40	87	BARKAS	63	EMUL

$m_{\Sigma^-} - m_\Lambda$

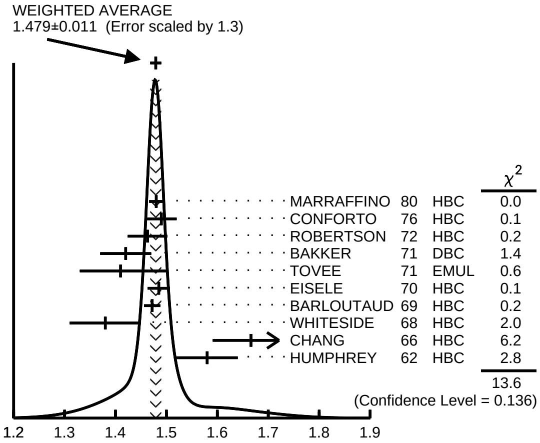
VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
81.752±0.034 OUR FIT	Error includes scale factor of 1.2.				
81.69 ±0.07 OUR AVERAGE					
81.64 ±0.09	2279	HEPP	68	HBC	
81.80 ±0.13	85	SCHMIDT	65	HBC	See note with Λ mass
81.70 ±0.19		BURNSTEIN	64	HBC	

Σ^- MEAN LIFE

Measurements with an error $\geq 0.2 \times 10^{-10}$ s have been omitted.

VALUE (10^{-10} s)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
1.479±0.011 OUR AVERAGE	Error includes scale factor of 1.3. See the ideogram below.				
1.480±0.014	16k	MARRAFFINO	80	HBC	$K^- p$ 0.42–0.5 GeV/c
1.49 ±0.03	8437	CONFORTO	76	HBC	$K^- p$ 1–1.4 GeV/c
1.463±0.039	2400	ROBERTSON	72	HBC	$K^- p$ 0.25 GeV/c
1.42 ±0.05	1383	BAKKER	71	DBC	$K^- N \rightarrow \Sigma^- \pi\pi$
$1.41\ ^{+0.09}_{-0.08}$		TOVEE	71	EMUL	
1.485±0.022	100k	EISELE	70	HBC	$K^- p$ at rest
1.472±0.016	10k	BARLOUTAUD	69	HBC	$K^- p$ 0.4–1.2 GeV/c
1.38 ±0.07	506	WHITESIDE	68	HBC	$K^- p$ at rest
1.666±0.075	3267	[2] CHANG	66	HBC	$K^- p$ at rest
1.58 ±0.06	1208	HUMPHREY	62	HBC	$K^- p$ at rest

[2] We have increased the CHANG 66 error of 0.018; see our 1970 edition, Reviews of Modern Physics **42** No. 1 (1970).

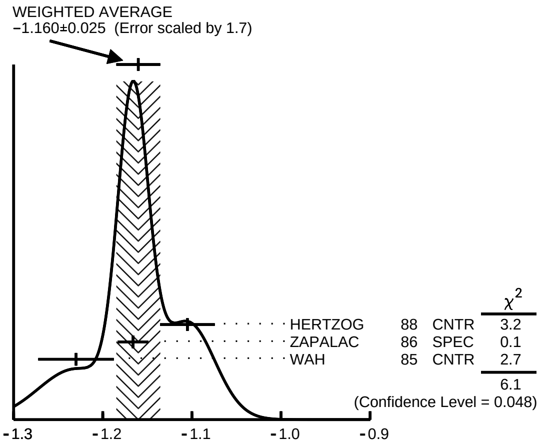


Σ^- mean life (10^{-10} s)

Σ^- MAGNETIC MOMENT

See the Note on Baryon Magnetic Moments in the Λ Listings. Measurements with an error $\geq 0.3\ \mu_N$ have been omitted.

VALUE (μ_N)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
−1.160±0.025 OUR AVERAGE	Error includes scale factor of 1.7. See the ideogram below.				
−1.105±0.029±0.010		HERTZOG	88	CNTR	Σ^- Pb, Σ^- W atoms
−1.166±0.014±0.010	671k	ZAPALAC	86	SPEC	$n e^- \nu$, $n\pi^-$ decays
−1.23 ±0.03 ±0.03		WAH	85	CNTR	pCu $\rightarrow \Sigma^- X$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
−0.89 ±0.14	516k	DECK	83	SPEC	pBe $\rightarrow \Sigma^- X$



Σ^- magnetic moment (μ_N)

Σ^- DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$n\pi^-$	(99.848±0.005) %
Γ_2	$n\pi^-\gamma$	[a] (4.6 ±0.6) $\times 10^{-4}$
Γ_3	$n e^- \overline{\nu}_e$	(1.017±0.034) $\times 10^{-3}$
Γ_4	$n \mu^- \overline{\nu}_\mu$	(4.5 ±0.4) $\times 10^{-4}$
Γ_5	$\Lambda e^- \overline{\nu}_e$	(5.73 ±0.27) $\times 10^{-5}$

[a] See the Full Listings below for the pion momentum range used in this measurement.