THOMAS	73	NP B56 15	+Engler, Fisk, Kraemer	(CMU) JP
AGUILAR-...	72B	PR D6 29	Aguilar-Benitez, Chung, Eisner, Samios	(BNL)
MEISNER	72	NC 12A 62		(UNC, LBL)
COLLEY	71B	NP B31 61	+Cox, Eastwood, Fry+	(BIRM, EDIN, GLAS, LOIC)
AGUILAR-...	70B	PRL 25 58	Aguilar-Benitez, Barnes, Bassano+	(BNL, SYRA)
PAN	69	PRL 23 808	+Forman	(PENN) I
SIEGEL	67	UCRL 18041 Thesis		(LRL)
BIRMINGHAM	66	PR 152 1148		(BIRM, GLAS, LOIC, OXF, RHEL)
LONDON	66	PR 143 1034	+Rau, Goldberg, Lichtman+	(BNL, SYRA) J
ARMENTEROS	65B	PL 19 75	+	(CERN, HEID, SACL)
SMITH	65	UCLA Thesis		(UCLA)
COOPER	64	PL 8 365	+Filthuth, Fridman, Malamud+	(CERN, AMST)
HUWE	64	UCRL 11291 Thesis		(LRL) JP
Also	69	PR 180 1824	Huwe	(LRL)
CURTIS	63	PR 132 1771	+Coffin, Meyer, Terwilliger	(MICH) J
ALSTON	62	CERN Conf. 311	+Alvarez, Ferro-Luzzi+	(LRL)
BASTIEN	61	PRL 6 702	+Ferro-Luzzi, Rosenfeld	(LRL)
DAHL	61	PRL 6 142	+Horwitz, Miller, Murray, White	(LRL)
ELY	61	PRL 7 461	+Fung, Gidal, Pan, Powell, White	(LRL) J
ALSTON	60	PRL 5 520	+Alvarez, Eberhard, Good, Graziano+	(LRL) I

$\Sigma(1480)$ Bumps

$I(J^P) = 1(?^?)$ Status: $*$

OMITTED FROM SUMMARY TABLE

These are peaks seen in $\Lambda\pi$ and $\Sigma\pi$ spectra in the reaction $\pi^+ p \to (Y\pi)K^+$ at 1.7 GeV/c. Also, the Y polarization oscillates in the same region.

MILLER 70 suggests a possible alternate explanation in terms of a reflection of $N(1675) \to \Lambda K$ decay. However, such an explanation for the $(\Sigma^+\pi^0)K^+$ channel in terms of $\Delta(1650) \to \Sigma K$ decay seems unlikely (see PAN 70). In addition such reflections would also have to account for the oscillation of the Y polarization in the 1480 MeV region.

HANSON 71, with less data than PAN 70, can neither confirm nor deny the existence of this state. MAST 75 sees no structure in this region in $K^- p \to \Lambda\pi^0$.

ENGELEN 80 performs a multichannel analysis of $K^- p \to p\overline{K}^0\pi^-$ at 4.2 GeV/c. They observe a 3.5 standard-deviation signal at 1480 MeV in $p\overline{K}^0$ which cannot be explained as a reflection of any competing channel.

$\Sigma(1480)$ MASS (PRODUCTION EXPERIMENTS)

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
≈ 1480 OUR ESTIMATE						
1480	120	ENGELEN	80	HBC	+	$K^- p \to (p\overline{K}^0)\pi^-$
1485±10		CLINE	73	MPWA	−	$K^- d \to (\Lambda\pi^-)p$
1479±10		PAN	70	HBC	+	$\pi^+ p \to (\Lambda\pi^+)K^+$
1465±15		PAN	70	HBC	+	$\pi^+ p \to (\Sigma\pi)K^+$

$\Sigma(1480)$ WIDTH (PRODUCTION EXPERIMENTS)

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
80±20	120	ENGELEN	80	HBC	+	$K^- p \to (p\overline{K}^0)\pi^-$
40±20		CLINE	73	MPWA	−	$K^- d \to (\Lambda\pi^-)p$
31±15		PAN	70	HBC	+	$\pi^+ p \to (\Lambda\pi^+)K^+$
30±20		PAN	70	HBC	+	$\pi^+ p \to (\Sigma\pi)K^+$

$\Sigma(1480)$ DECAY MODES (PRODUCTION EXPERIMENTS)

	Mode
Γ_1	$N\overline{K}$
Γ_2	$\Lambda\pi$
Γ_3	$\Sigma\pi$

$\Sigma(1480)$ BRANCHING RATIOS (PRODUCTION EXPERIMENTS)

$\Gamma(\Sigma\pi)/\Gamma(\Lambda\pi)$ — Γ_3/Γ_2

VALUE	DOCUMENT ID		TECN	CHG
0.82±0.51	PAN	70	HBC	+

$\Gamma(N\overline{K})/\Gamma(\Lambda\pi)$ — Γ_1/Γ_2

VALUE	DOCUMENT ID		TECN	CHG
0.72±0.50	PAN	70	HBC	+

$\Gamma(N\overline{K})/\Gamma_{total}$ — Γ_1/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
small	CLINE	73	MPWA	$K^- d \to (\Lambda\pi^-)p$

$\Sigma(1480)$ REFERENCES (PRODUCTION EXPERIMENTS)

ENGELEN	80	NP B167 61	+Jongejans, Dionisi+	(NIJM, AMST, CERN, OXF)
MAST	75	PR D11 3078	+Alston-Garnjost, Bangerter+	(LBL)
CLINE	73	LNC 6 205	+Laumann, Mapp	(WISC) IJP
HANSON	71	PR D4 1296	+Kalmus, Louie	(LBL) I
MILLER	70	Duke Conf. 229		(PURD)
PAN	70	PR D2 49	+Forman, Ko, Hagopian, Selove	(PENN)
Also	69	PRL 23 808	Pan, Forman	(PENN) I
Also	69B	PRL 23 806	Pan, Forman	(PENN) I

$\Sigma(1560)$ Bumps

$I(J^P) = 1(?^?)$ Status: $**$

OMITTED FROM SUMMARY TABLE

This entry lists peaks reported in mass spectra around 1560 MeV without implying that they are necessarily related.

DIONISI 78B observes a 6 standard-deviation enhancement at 1553 MeV in the charged $\Lambda/\Sigma\pi$ mass spectra from $K^- p \to (\Lambda/\Sigma)\pi K\overline{K}$ at 4.2 GeV/c. In a CERN ISR experiment, LOCKMAN 78 reports a narrow 6 standard-deviation enhancement at 1572 MeV in $\Lambda\pi^\pm$ from the reaction $pp \to \Lambda\pi^+\pi^- X$. These enhancements are unlikely to be associated with the $\Sigma(1580)$ (which has not been confirmed by several recent experiments – see the next entry in the Listings).

CARROLL 76 observes a bump at 1550 MeV (as well as one at 1580 MeV) in the isospin-1 $\overline{K}N$ total cross section, but uncertainties in cross section measurements outside the mass range of the experiment preclude estimating its significance.

See also MEADOWS 80 for a review of this state.

$\Sigma(1560)$ MASS (PRODUCTION EXPERIMENTS)

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
≈ 1560 OUR ESTIMATE						
1553±7	121	DIONISI	78B	HBC	±	$K^- p \to (Y\pi)K\overline{K}$
1572±4	40	LOCKMAN	78	SPEC	±	$pp \to \Lambda\pi^+\pi^- X$

$\Sigma(1560)$ WIDTH (PRODUCTION EXPERIMENTS)

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
79±30	121	DIONISI	78B	HBC	±	$K^- p \to (Y\pi)K\overline{K}$
15± 6	40	[1] LOCKMAN	78	SPEC	±	$pp \to \Lambda\pi^+\pi^- X$

$\Sigma(1560)$ DECAY MODES (PRODUCTION EXPERIMENTS)

	Mode	Fraction (Γ_i/Γ)
Γ_1	$\Lambda\pi$	seen
Γ_2	$\Sigma\pi$	

$\Sigma(1560)$ BRANCHING RATIOS (PRODUCTION EXPERIMENTS)

$\Gamma(\Sigma\pi)/[\Gamma(\Lambda\pi)+\Gamma(\Sigma\pi)]$ — $\Gamma_2/(\Gamma_1+\Gamma_2)$

VALUE	DOCUMENT ID		TECN	CHG	COMMENT
0.35±0.12	DIONISI	78B	HBC	±	$K^- p \to (Y\pi)K\overline{K}$

$\Gamma(\Lambda\pi)/\Gamma_{total}$ — Γ_1/Γ

VALUE	DOCUMENT ID		TECN	CHG	COMMENT
seen	LOCKMAN	78	SPEC	±	$pp \to \Lambda\pi^+\pi^- X$

$\Sigma(1560)$ FOOTNOTES (PRODUCTION EXPERIMENTS)

[1] The width observed by LOCKMAN 78 is consistent with experimental resolution.