$\Sigma(1620)$ Production Experiments

$$I(J^P) = 1(?^?)$$

OMITTED FROM SUMMARY TABLE

Formation experiments are listed separately in the previous entry.

The results of CRENNELL 69B at 3.9 GeV/c are not confirmed by SABRE 70 at 3.0 GeV/c. However, at 4.5 GeV/c, AMMANN 70 sees a peak at 1642 MeV which on the basis of branching ratios they do not associate with the $\Sigma(1670)$. See MILLER 70 for a review of these conflicts.

$\Sigma(1620)$ MASS (PRODUCTION EXPERIMENTS)

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
≈ 1620 OUR ESTIMATE						
1642±12		AMMANN	70	DBC		$K^- N$ 4.5 GeV/c
1618± 3	20	BLUMENFELD	69	HBC	+	$K^0_L p$
1619± 8		CRENNELL	69B	DBC	±	$K^- N \rightarrow \Lambda\pi\pi\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1616± 8		CRENNELL	68	DBC	±	See CRENNELL 69B

$\Sigma(1620)$ WIDTH (PRODUCTION EXPERIMENTS)

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
55±24		AMMANN	70	DBC		$K^- N$ 4.5 GeV/c
30±10	20	BLUMENFELD	69	HBC	+	
72^{+22}_{-15}		CRENNELL	69B	DBC	±	
• • • We do not use the following data for averages, fits, limits, etc. • • •						
66±16		CRENNELL	68	DBC	±	See CRENNELL 69B

$\Sigma(1620)$ DECAY MODES (PRODUCTION EXPERIMENTS)

	Mode
Γ_1	$N\overline{K}$
Γ_2	$\Lambda\pi$
Γ_3	$\Sigma\pi$
Γ_4	$\Lambda\pi\pi$
Γ_5	$\Sigma(1385)\pi$
Γ_6	$\Lambda(1405)\pi$

Σ(1620) BRANCHING RATIOS (PRODUCTION EXPERIMENTS)

$\Gamma(\Lambda\pi\pi)/\Gamma(\Lambda\pi)$ — Γ_4/Γ_2

VALUE	EVTS	DOCUMENT ID		TECN	CHG
~ 2.5	14	BLUMENFELD	69	HBC	+

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

VALUE	DOCUMENT ID		TECN	CHG	COMMENT
0.4±0.4	AMMANN	70	DBC		$K^- p$ 4.5 GeV/c
0.0±0.1	CRENNELL	68	DBC	+	See CRENNELL 69B

$\Gamma(\Lambda\pi)/\Gamma_{total}$ — Γ_2/Γ

VALUE	DOCUMENT ID		TECN	CHG
large	CRENNELL	68	DBC	±

$\Gamma(\Sigma(1385)\pi)/\Gamma(\Lambda\pi)$ — Γ_5/Γ_2

VALUE	CL%	DOCUMENT ID		TECN	CHG	COMMENT
<0.3	95	AMMANN	70	DBC		$K^- p$ 4.5 GeV/c
0.2±0.1		CRENNELL	68	DBC	±	

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

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.1	95	AMMANN	70	DBC	$K^- N$ 4.5 GeV/c

$\Gamma(\Lambda(1405)\pi)/\Gamma(\Lambda\pi)$ — Γ_6/Γ_2

VALUE	DOCUMENT ID		TECN	COMMENT
0.7±0.4	AMMANN	70	DBC	$K^- p$ 4.5 GeV/c

Σ(1620) REFERENCES (PRODUCTION EXPERIMENTS)

AMMANN 70 PRL 24 327 A.C. Ammann et al. (PURD, IND)
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CRENNELL 69B Lund Paper 183 D.J. Crennell et al. (BNL, CUNY) I
Results are quoted in LEVI-SETTI 69C.
Also Lund Conf. R. Levi-Setti (EFI)
CRENNELL 68 PRL 21 648 D.J. Crennell et al. (BNL, CUNY) I