

Σ(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 Σ(1670). See MILLER 70 for a review of these conflicts.

Σ(1620) MASS (PRODUCTION EXPERIMENTS)

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

Σ(1620) WIDTH (PRODUCTION EXPERIMENTS)

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>
55 ± 24		AMMANN 70	DBC		$K^- N$ 4.5 GeV/ <i>c</i>
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

Σ(1620) DECAY MODES (PRODUCTION EXPERIMENTS)

Mode
Γ ₁ $N \bar{K}$
Γ ₂ $\Lambda \pi$
Γ ₃ $\Sigma \pi$
Γ ₄ $\Lambda \pi \pi$
Γ ₅ $\Sigma(1385) \pi$
Γ ₆ $\Lambda(1405) \pi$

$\Sigma(1620)$ BRANCHING RATIOS (PRODUCTION EXPERIMENTS)

$\Gamma(\Lambda\pi\pi)/\Gamma(\Lambda\pi)$					Γ_4/Γ_2
<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	
~ 2.5	14	BLUMENFELD 69	HBC	+	

$\Gamma(N\bar{K})/\Gamma(\Lambda\pi)$					Γ_1/Γ_2
<u>VALUE</u>		<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>
0.4±0.4		AMMANN 70	DBC		$K^- p$ 4.5 GeV/c
0.0±0.1		CRENNELL 68	DBC	+	See CRENNELL 69B

$\Gamma(\Lambda\pi)/\Gamma_{\text{total}}$					Γ_2/Γ
<u>VALUE</u>		<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	
large		CRENNELL 68	DBC	±	

$\Gamma(\Sigma(1385)\pi)/\Gamma(\Lambda\pi)$					Γ_5/Γ_2
<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>
<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
<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<1.1	95	AMMANN 70	DBC	$K^- N$ 4.5 GeV/c	

$\Gamma(\Lambda(1405)\pi)/\Gamma(\Lambda\pi)$					Γ_6/Γ_2
<u>VALUE</u>		<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
0.7±0.4		AMMANN 70	DBC	$K^- p$ 4.5 GeV/c	

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

AMMANN 70	PRL 24 327	A.C. Ammann <i>et al.</i>	(PURD, IND)
Also	PR D7 1345	A.C. Ammann <i>et al.</i>	(PURD, IUPU)
MILLER 70	Duke Conf. 229	D.H. Miller	(PURD)
Hyperon Resonances, 1970			
SABRE 70	NP B16 201	R. Barloutaud <i>et al.</i>	(SABRE Collab.)
BLUMENFELD 69	PL 29B 58	B.J. Blumenfeld, G.R. Kalbfleisch	(BNL) I
CRENNELL 69B	Lund Paper 183	D.J. Crennell <i>et al.</i>	(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 <i>et al.</i>	(BNL, CUNY) I