

# $\Sigma(1620)$ 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)

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

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

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

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

	Mode
$\Gamma_1$	$N \bar{K}$
$\Gamma_2$	$\Lambda \pi$
$\Gamma_3$	$\Sigma \pi$
$\Gamma_4$	$\Lambda \pi \pi$
$\Gamma_5$	$\Sigma(1385) \pi$
$\Gamma_6$	$\Lambda(1405) \pi$

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

$\Gamma(\Lambda\pi\pi)/\Gamma(\Lambda\pi)$					$\Gamma_4/\Gamma_2$
<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	
~ 2.5	14	BLUMENFELD 69	HBC	+	

  

$\Gamma(N\bar{K})/\Gamma(\Lambda\pi)$					$\Gamma_1/\Gamma_2$
<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

  

$\Gamma(\Lambda\pi)/\Gamma_{\text{total}}$					$\Gamma_2/\Gamma$
<u>VALUE</u>		<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	
large		CRENNELL 68	DBC	±	

  

$\Gamma(\Sigma(1385)\pi)/\Gamma(\Lambda\pi)$					$\Gamma_5/\Gamma_2$
<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	±	

  

$\Gamma(\Sigma\pi)/\Gamma(\Lambda\pi)$					$\Gamma_3/\Gamma_2$
<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	

  

$\Gamma(\Lambda(1405)\pi)/\Gamma(\Lambda\pi)$					$\Gamma_6/\Gamma_2$
<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