

# Σ(1560) Bumps

$$I(J^P) = 1(?^?) \quad \text{Status: } **$$

## 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  $K^- p \rightarrow (\Lambda/\Sigma)\pi K\bar{K}$  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  $pp \rightarrow \Lambda\pi^+\pi^- X$ . 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  $\bar{K}N$  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.

### Σ(1560) MASS (PRODUCTION EXPERIMENTS)

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

### Σ(1560) WIDTH (PRODUCTION EXPERIMENTS)

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
79±30	121	DIONISI	78B HBC	±	$K^- p \rightarrow (Y\pi)K\bar{K}$
15±6	40	<sup>1</sup> LOCKMAN	78 SPEC	±	$pp \rightarrow \Lambda\pi^+\pi^- X$

### Σ(1560) DECAY MODES (PRODUCTION EXPERIMENTS)

Mode	Fraction ( $\Gamma_j/\Gamma$ )
$\Gamma_1 \quad \Lambda\pi$	seen
$\Gamma_2 \quad \Sigma\pi$	

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

$\Gamma(\Sigma\pi)/[\Gamma(\Lambda\pi) + \Gamma(\Sigma\pi)]$						$\Gamma_2/(\Gamma_1+\Gamma_2)$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>		
0.35 ± 0.12	DIONISI	78B	HBC	±	$K^- p \rightarrow (Y\pi) K \bar{K}$	
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$\Gamma(\Lambda\pi)/\Gamma_{\text{total}}$						$\Gamma_1/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>		
<b>seen</b>	LOCKMAN	78	SPEC	±	$pp \rightarrow \Lambda\pi^+\pi^- X$	

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

<sup>1</sup> The width observed by LOCKMAN 78 is consistent with experimental resolution.

## $\Sigma(1560)$ REFERENCES (PRODUCTION EXPERIMENTS)

MEADOWS	80	Toronto Conf. 283	B.T. Meadows	
DIONISI	78B	PL 78B 154	C. Dionisi, R. Armenteros, J. Diaz	(CINC)
LOCKMAN	78	Saclay DPHPE 78-01	W. Lockman <i>et al.</i>	(CERN, AMST+) I
CARROLL	76	PRL 37 806	A.S. Carroll <i>et al.</i>	(UCLA, SACL) (BNL) I