

$\Sigma(3170)$ Bumps

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

OMITTED FROM SUMMARY TABLE

Seen by AMIRZADEH 79 as a narrow 6.5-standard-deviation enhancement in the reaction $K^- p \rightarrow Y^{*+} \pi^-$ using data from independent high statistics bubble chamber experiments at 8.25 and 6.5 GeV/c. The dominant decay modes are multibody, multistrange final states and the production is via isospin-3/2 baryon exchange. Isospin 1 is favored.

Not seen in a $K^- p$ experiment in LASS at 11 GeV/c (ASTON 85B).

$\Sigma(3170)$ MASS
(PRODUCTION EXPERIMENTS)

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
≈ 3170 OUR ESTIMATE				
3170 ± 5	35	AMIRZADEH 79	HBC	$K^- p \rightarrow Y^{*+} \pi^-$

$\Sigma(3170)$ WIDTH
(PRODUCTION EXPERIMENTS)

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
< 20	35	¹ AMIRZADEH 79	HBC	$K^- p \rightarrow Y^{*+} \pi^-$

$\Sigma(3170)$ DECAY MODES
(PRODUCTION EXPERIMENTS)

Mode	Fraction (Γ_i/Γ)
$\Gamma_1 \quad \Lambda K \bar{K} \pi$'s	seen
$\Gamma_2 \quad \Sigma K \bar{K} \pi$'s	seen
$\Gamma_3 \quad \Xi K \pi$'s	seen

$\Sigma(3170)$ BRANCHING RATIOS
(PRODUCTION EXPERIMENTS)

$\Gamma(\Lambda K \bar{K} \pi \text{'s})/\Gamma_{\text{total}}$	Γ_1/Γ
VALUE	DOCUMENT ID TECN COMMENT
seen	AMIRZADEH 79 HBC $K^- p \rightarrow Y^{*+} \pi^-$
$\Gamma(\Sigma K \bar{K} \pi \text{'s})/\Gamma_{\text{total}}$	Γ_2/Γ
VALUE	DOCUMENT ID TECN COMMENT
seen	AMIRZADEH 79 HBC $K^- p \rightarrow Y^{*+} \pi^-$

$\Gamma(\Xi K \pi's)/\Gamma_{\text{total}}$				Γ_3/Γ
VALUE	DOCUMENT ID	TECN	COMMENT	
seen	AMIRZADEH 79	HBC	$K^- p \rightarrow \Upsilon^{*+} \pi^-$	

**$\Sigma(3170)$ FOOTNOTES
(PRODUCTION EXPERIMENTS)**

¹ Observed width consistent with experimental resolution.

**$\Sigma(3170)$ REFERENCES
(PRODUCTION EXPERIMENTS)**

ASTON	85B	PR D32 2270	D. Aston <i>et al.</i>	(SLAC, CARL, CNRC, CINC)
AMIRZADEH	79	PL 89B 125	J. Amirzadeh <i>et al.</i>	(BIRM, CERN, GLAS+) I
Also	80	Toronto Conf. 263	J.B. Kinson <i>et al.</i>	(BIRM, CERN, GLAS+) I