

ESTIMATION OF PARTIAL CROSS-SECTIONS

FOR THE 4-PRONG $\bar{p}p$ INTERACTIONS AT 5.7 GEV/C

A. Accensi, V. Alles-Borelli, B. French and L. Michejda

Out of 107 4-prong events measured with IEP's, 88 events have been successfully passed through THRESH. From these 88 events, using GRIND and estimating bubble density on prints, 50 fitted events of reactions without strange particle production have been selected.

In the following table the observed percentages for six considered channels are given, together with estimated numbers of events in the available films (assuming 25,000 4-prong events in a fiducial region) :

	CHANNEL	OBSERVED		ESTIMATED NUMBERS OF EVENTS
		NUMBERS OF EVENTS	PERCENTAGES	
ANNIHILATIONS	$\pi^+ \pi^+ \pi^- \pi^-$	3	3.4 ± 2.0	$\sim 0,800$
	$\pi^+ \pi^+ \pi^- \pi^- \pi^0$	6	6.8 ± 2.8	$\sim 1,700$
PION PRODUCTION	$p\bar{p}\pi^+ \pi^-$	18	20.5 ± 4.8	$\sim 5,100$
	$p\bar{p}\pi^+ \pi^- \pi^0$	8	9.1 ± 3.2	$\sim 2,300$
	$p\bar{n}\pi^- \pi^+ \pi^+$	7	8.0 ± 3.0	} $\sim 4,300$
	$p\bar{n}\pi^- \pi^+ \pi^-$	8	9.1 ± 3.2	
TOTAL	FITTED	50	56.9	$\sim 14,200$

Possible difficulties in unique identification of these reactions can be inferred from the numbers obtained for the 50 fitted events. Amongst them

32% had only one good hypothesis,

32% had more, but a rough estimation of ionisation on prints could completely resolve the ambiguity left by GRIND,

24% would be uniquely identified if the bubble density measurements with the typical microscope accuracy are available,

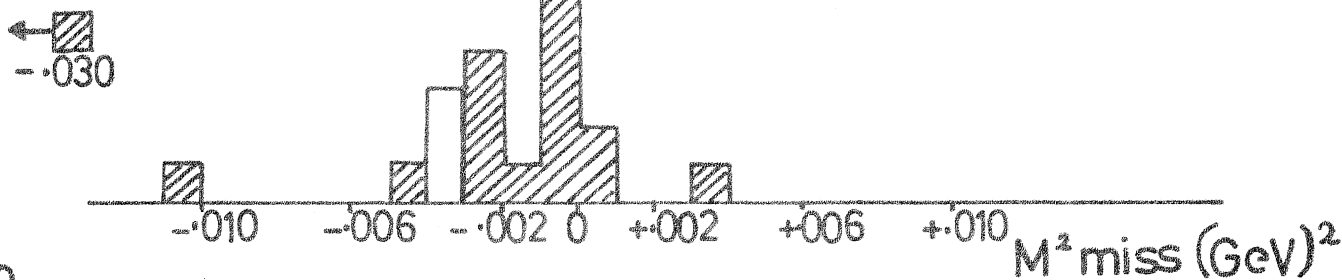
12% are ambiguous and ionisation measurements would not help in their unique identification.

(The last two numbers can be lowered to 8% and 4% respectively when one considers only events for which 2 or more GRIND hypotheses have comparable probabilities.)

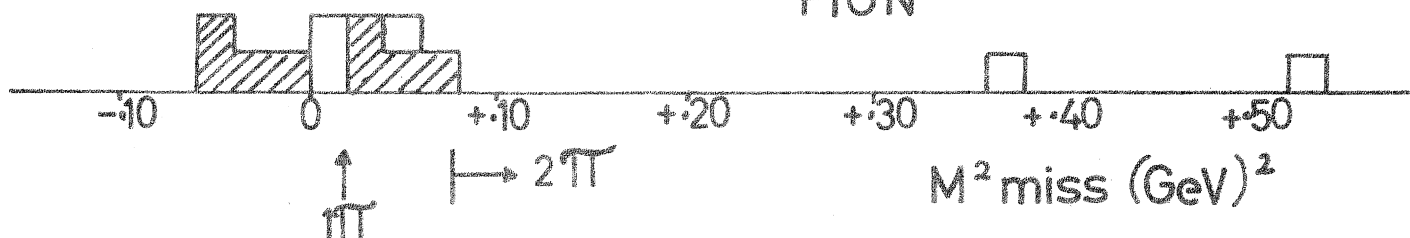
The presented χ^2 and missing mass distributions for fitted events show that their separation from unfitted channels is also quite good.

MISSING MASS DISTRIBUTIONS

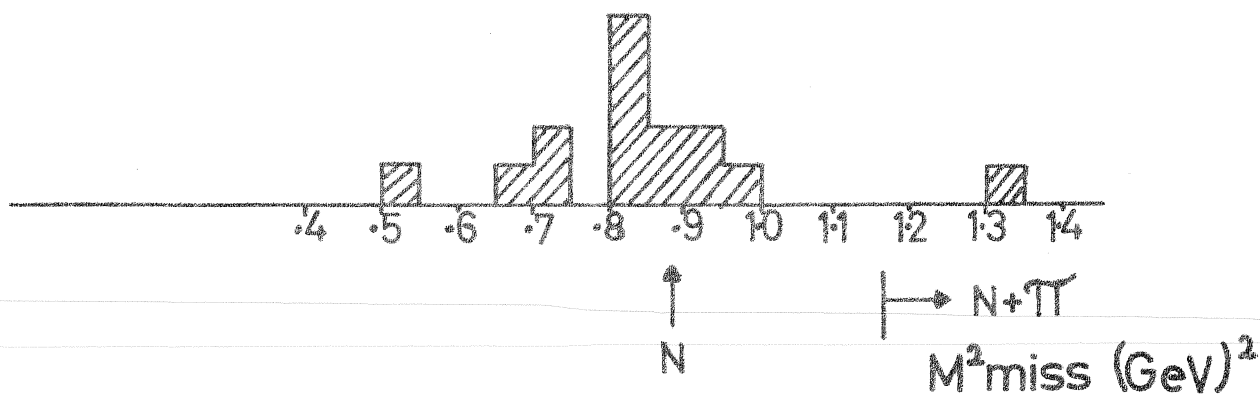
EVENTS FITTED
WITHOUT NEUTRALS



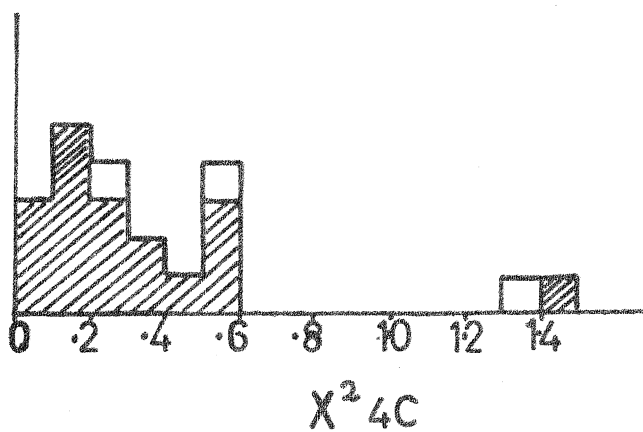
EVENTS FITTED
WITH ONE NEUTRAL
PION



EVENTS FITTED
WITH SINGLE NEUTRON
OR ANTYNEUTRON

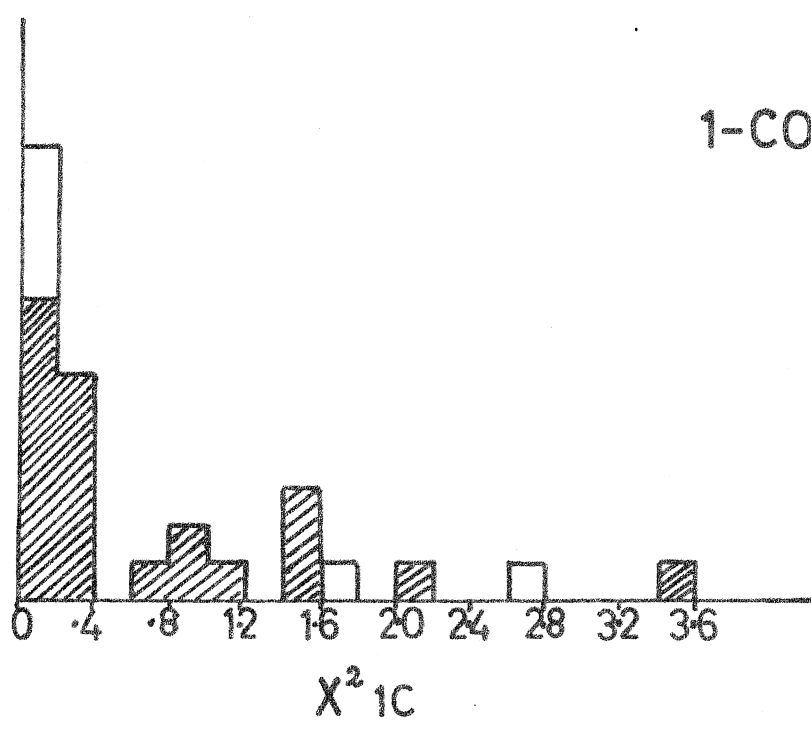


4-CONSTRAINS FITS



X^2 DISTRIBUTIONS

1-CONSTRAINS FITS



- ANNIHILATIONS
- PION PRODUCTION