STUDY OF THE REACTION $\bar{p}p \to K_1^0 K^{\pm}\pi^{\mp}$ BETWEEN 1.50-2.04 GeV/c

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(Presented by M. Bogdanski)

We have studied $\bar{p}p$ interactions on 400 000 pictures taken in the CERN 2 m - HBC at 8 incident momenta, between 1.50 and 2.04 GeV/c. The film was double-scanned for $\bar{p}p$ annihilations with at least one visible neutral stange-particle decay.

We present here some results based on 966 events found for the 4-C channel :

$$\bar{p}p \to K_1^0 K^{\pm}\pi^{\mp}$$

Fig. 1 shows the different two-particle effective-mass distributions. The best fit deduced by maximum likelihood method is obtained when we assume contributions from two coherent K* Breit-Wigners, incoherent K_N and A_2 Breit-Wigners and phase-space. Results about the percentages for production of resonances are reported below :

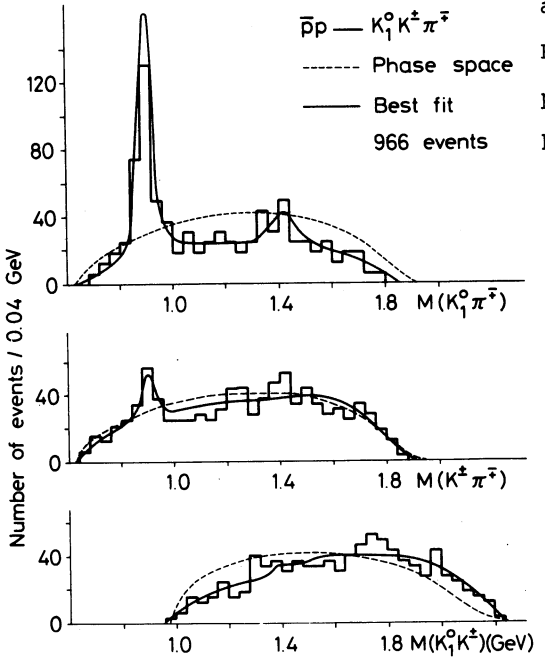

Fig. 1

	[%]
$K^{*\pm}$	30.7
K^{*0}	0.3
$K^{*\pm}$-K^{*0} interference	2.8
$K_N^{\pm}$	7.8
K_N^0	(2.2)
A_2	(0.8)
P.S.	55.4

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There is a considerable charged-K* production, whereas the neutral-K* is much less abundant. It appears mainly in the $K^{*\pm}$-K^{*o} interference region. See fig. 2 for Dalitz plot. K_N and A_2 productions are compatible with o%.

We agree with the main features reported by CHAPMAN et al. [1] and OH et al. [2] in the same momentum range.

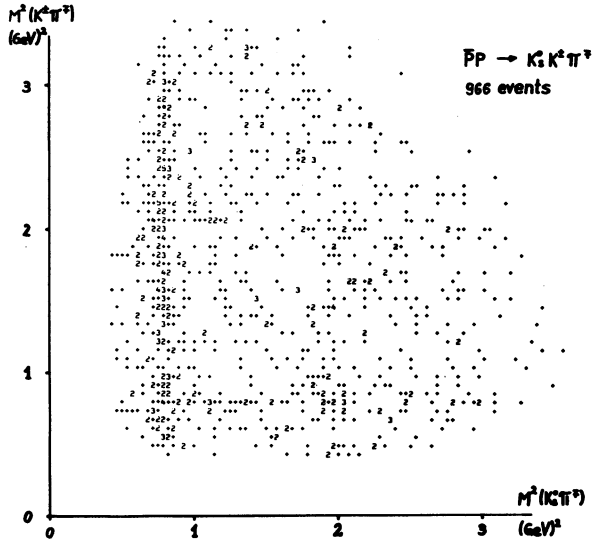

Fig. 2

On top of fig. 3, we observe a bump in the 4-momentum transfer distribution for $-1.45 < t < -1.25$ GeV^2 (t is for $t_{\bar{p}K^-}$ or t_{pK^+}). A same kind of phenomenon was already reported at the Chexbres Symposium, in the t-distribution for $\bar{p}p$ annihilations into K^-K^+ and $\pi^-\pi^+$ [3]. If we look at

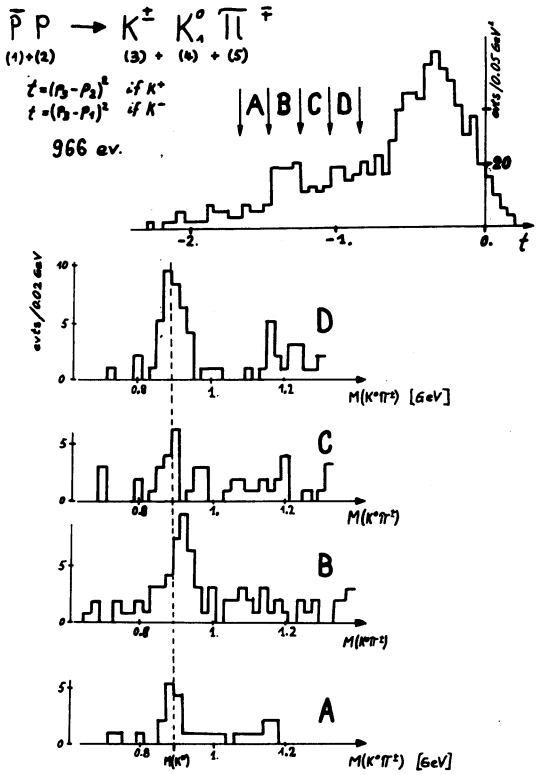

Fig. 3

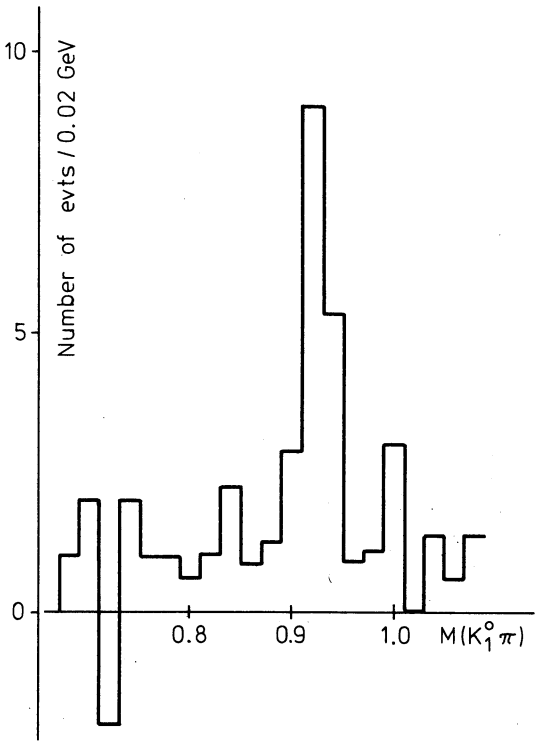

Fig. 4

$(K^{o}\pi^{\pm})$-effective mass distributions for different t-cuts (bottom of fig. 3), we get a shifted K*-mass for the t-region corresponding to the enhancement. We tried to extract the shape of the $(K^{o}\pi^{\pm})$-effective mass distribution for events in the bump by background behaviour subtraction. We are left with a narrow peak at 920 MeV (fig. 4).

For the charged-K*, we have computed (in the S-channel transversity frame) a lower limit of the degree of polarization d_ρ, using a formalism proposed by the group of MICHEL [4,5]. We obtain :

$$d_\rho \geq (37.5 \pm 7.5)\ \%$$

For the three non-vanishing measurable multipole parameters, we found the following values (Same notations than [5]) :

$$r_o^2 = -0.36 \pm 0.07$$

$$r_2^2 = -0.10 \pm 0.04$$

$$r_{-2}^2 = -0.02 \pm 0.01$$

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REFERENCES

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D I S C U S S I O N

- *Diaz:*

Probably the Van Hove plot looks very similar to the phase space because you have added two channels, the $K_1^0K^+\pi^-$ and $K_1^0K^-\pi^+$. Small possible peripherality of K^+ or K^- can perhaps be seen if you investigate these channels separately.