EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

PH I/COM-71/16
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PHYSICS I
ELECTRONICS EXPERIMENTS COMMITTEE

LETTER OF INTENTION ABOUT 1972

by

Λ^{o} missing mass group (S104)

MEMORANDUM TO THE EEC

from S104 (Λ^0 missing mass)

Subject: Letter of intention about 1972.

After the completion of the approved part of the experiment, namely the study of the M^0 spectrum in the reaction $\pi^- p \to \Lambda^0 + M^0$ at 6-10 GeV/c with $\Delta^2_{p\Lambda} < 1$ $(GeV/c)^2$, the Group is considering the two following eventual extensions of the experiment, both feasible with minor modifications to the apparatus:

i) study of the M^0 spectrum in the reaction

$$K^- p \to \Lambda^0 + M^0 \quad \left(M^0 \gtrsim 500\ MeV\ ;\ \Delta^2_{p\Lambda} < 1\ (GeV/c)^2\right)$$

at 5÷7 GeV/c.

No changes are needed to the apparatus nor to the beam setup. K^- is selected at the triggering level. An M^0 spectrum from a bubble chamber experiment[1] at $\sim$ 5 GeV/c is shown in fig. 1.

ii) Measurement of the Λ^0 polarization in the reactions

$$\pi^- p \to \Lambda^0 K^0 \quad \left(\Delta^2_{p\Lambda} < 1 \quad (GeV/c)^2\right)$$

(possibly $\pi^- p \to \Lambda^0 K^{*0}_{892}$)

$$K^- p \to \Lambda^0 \pi^0 \quad \left(\Delta^2_{p\Lambda} < 1 \quad (GeV/c)^2\right)$$

(possibly $K^- p \to \Lambda^0 \omega^0$)

at 5-7 GeV/c. Only very sparse data exist on these polarizations; it is obvious the high physical interest in an eventual comparison between the two crossed channels $\pi^- p \to \Lambda^0 K^0$ and $K^- p \to \Lambda^0 \pi^0$, and

between $\bar{p}p \to \Lambda^0 K^0$ and other existing and forthcoming[2] data on $\pi N \to \Sigma K$ channels. A rearrangement of the apparatus, with only minor modifications, will be needed in order to shift its efficiency region to low missing-mass values. No change of the beam will be needed.

For both the above mentioned possible developments calculations are under way; a detailed proposal will be submitted after a priority choice between the two possibilities.

- REFERENCES

1) Private communication from BNL, Bubble Chamber Group.

2) CERN / D. PH. II / 71-2 : Direct Measurement of Helicity amplitudes $\pi^+ p \to K^+ \Sigma^+$, $K^- p \to \pi^- \Sigma^+$, B. Sadoulet

mm(Λ) V° zero-prong events

875 events; $\cos\theta_{p,\Lambda} > 0.6$