PRELIMINARY RESULTS OF PHOTO-PRODUCTION EXPERIMENTS FROM 1-4 GEV

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(presented by R. Fessel)

SUMMARY

Results are presented from data collected with the system described in the previous paper with punched paper tape recording. The energy dependence of elastic π^0 photo-production was measured from 1 to 4 GeV at 90° and 60° in the centre of mass system. There is evidence for all the previously known pion-nucleon resonances. The general behaviour of the cross-sections is a monotonic decrease with increasing energy. There is some evidence for a resonant behaviour of the cross-section at a bombarding energy of 2.9 GeV. In addition, there is better evidence for a resonance at a gamma ray energy of 3.5 GeV. This system seems to show a large branching ratio for decay into a proton and an η^0.

DISCUSSION

SALVINI: Your result on the η cross-section is very interesting. The ratio of π photo-production to η photo-production at about 1 GeV is of the order of 10. The ratio of π to η reactions initiated by π's also seems to be of the order of 5. In your case at 3.5 GeV, on the contrary, you have 10 times more η's than π's. This is a big increase, much more I believe, than any possible contribution of the phase space. Do you know the ratio $\frac{\sigma(\eta)}{\sigma(\pi)}$ at other energies of the γ beam ?

FESSEL: Yes, I may also add that we have looked at an experiment which has been discussed here around 2.5 GeV for η o and in fact found the ratio about a 10th, or less. So this number here is really quite remarkable, and this is a number which applies right at that mass value.

ROBERTS: It isn't clear to me that you have any evidence that these necessarily come from the same channel, couldn't it be more than one channel ?

FESSEL: They go at the same mass.

ROBERTS: You can always pick a mass. Why do you assume that it has to come from a particle at a given mass ?

FESSEL: This occurs at only one gamma bombarding energy.

ROBERTS: Does it always occur at the same invariant mass of the two products ?

FESSEL: Yes, this is an invariant mass of the system.