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STUDY OF HIGH ENERGY ν AND $\bar{\nu}$ INTERACTIONS

IN BEBC FILLED WITH HYDROGEN

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The aim of the experiment is a detailed study of both inclusive and exclusive reactions on a free proton target

The clearest signal for charmed particle production is the appearance of $\Delta S = -\Delta Q$ events i.e. hyperon production by neutrinos. The high precision of the hydrogen bubble chamber gives the best means of distinguishing such events from the background of associated production

The production of isobars other than the $\Delta(1236)$ by neutrinos has so far not been observed. One may expect large numbers of events containing higher mass N^* and Δ isobars. Their cross-section will be a test of the quark model. Significant production of meson isobars (ρ , A_1 etc) is also expected

The study of inclusive reactions will include also those events containing missing neutrals for which 3-C fits are not possible. In these cases the transverse momentum balance method will be used to estimate the variables E_{ν} , q^2 and ν . One will thus be able to study the final state properties (charge ratios, multiplicities etc) as functions of the scaling variables x and y . One should also be able to make a significant test of the Adler sum rule and so check for any large-scale violations of charge symmetry invariance

2.5 10^5 pictures each with ν and $\bar{\nu}$ of the wide-band beam are requested to be taken with BEBC filled with hydrogen. At an intensity of 10^{13} p/pulse this would yield approximately 60 000 charged current ν -events and 20 000 $\bar{\nu}$ -events

References:

SPSC/74-91/P 25
 SPSC/75-66/M 52