

CERN LIBRARIES, GENEVA



CM-P00052550

PH I/COM-71/30
24 May 1971Letter of Intention

To : The Members of the EEC

From : H. Aoi^{o)}, D. Aschman⁺⁾ , N.E. Booth⁺⁾ , C. Caverzasio^{o)},
L. Dick^{*)} , A. Gonidec^{o)}, K. Green⁺⁾ , Z. Janout^{*)} , K. Kuroda^{o)},
A. Michalowicz^{o)}, D. Sillou^{o)}, and C.M. Spencer⁺⁾

*) CERN, o) IPN Orsay, +) Oxford

Subject : Intentions of the CERN-Orsay-Oxford Group.

=====

The S106 experiment on the measurement of the polarization in π^+p and π^-p backward elastic scattering has been successfully taking data. The results obtained on π^+p during the autumn of 1970 have been published¹⁾. These results are important as such, but are also exciting because they are in disagreement with all the current models. This has generated considerable theoretical activity in the last few months.

During March and April of 1971 we have taken π^+p data over a wider range of u [up to 0.8 (GeV/c)^2] and have also taken data on π^-p . Although the π^-p is more difficult, because of the lower cross-section, the theoretical interpretation in principle is simpler. The plexiglas total-reflection Cerenkov counters, which we have recently installed on the pion detection side, have given a significant improvement in the signal-to-background ratio, and permit us to see the elastic peak at a cross-section level of $1 \mu\text{b}/(\text{GeV/c})^2$. We should point out that this is the first measurement of backward π^-p polarization above about 2 GeV/c .

Nevertheless, the data rates are very low, and more running time is needed to obtain conclusive results on the π^-p . From the physics point of view, it may be important to measure the π^-p also at a higher energy, say 10 GeV/c . We think that we can make some improvements in the apparatus, which will partially offset the decrease in cross-section by a factor of three in going from 6 to 10 GeV/c .

We propose to spend 5 more weeks taking data on $\pi^- p$. We will postpone the decision as to how to divide this time between 6 and 10 GeV/c until we have carefully evaluated the results we are obtaining now.

* * *

REFERENCE

- 1) CERN-Orsay-Oxford Collaboration, Phys. Letters 35 B, 90 (1971).