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M E M O R A N D U M

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To/A : P.G. Hansen and K. Kilian

From/De : P. Garreta, Spokesman of PS184

Subject/: Objet PS184 Experiment

Answering your note of October 12th 82, we think that the minimal requirement for experiment PS 184 to produce significant results is the following :

- 2 test runs of about 1 day each with low intensity $\bar{p}$ beam of any momentum between 300 and 600 MeV/c (provided that we will have had enough test proton beam time at LEAR before).
- 1 production run of at least 3 days with high intensity $\bar{p}$ beam of about 300 MeV/c.
- 1 production run of at least 2 days with high intensity $\bar{p}$ beam of about 600 MeV/c (any momentum between 550 and 800 MeV/c would be suitable).
- 1 production run of at least 2 days with high intensity $\bar{p}$ beam of about 530 MeV/c (maximum of backward $\bar{p}p$ elastic scattering cross-section).

By high intensity we mean at least a few 10^5 $\bar{p}$/s.

The order in which we indicate the 3 production runs is irrelevant, it does not imply any priority in time since we believe that the scheduling will be mainly governed by the necessity of fitting with the other LEAR user's demand as far as momentum is concerned.

The first two production runs will be used to study $\bar{p}$ elastic and inelastic scattering at two different momenta. Theoretical predictions for the period of the angular distribution oscillations of the elastic cross-section presently range from 10^o for ^{40}Ca at 600 MeV/c.

Therefore such a crude information will already be very significant for the determination of the $\bar{p}$-Nucleus potential.

A few excitation spectra at 2 different momenta will also give very significant information about the role of annihilation in the selectivity of $\bar{p}$ as a nuclear probe.

The third production run will be used to confirm the excistence of antiprotonic nuclei (by means of the $(\vec{p},p)$ knock-out reaction) and, if they exist, to provide some information on their nature.

We insist on the fact that what we have indicated in this note is the minimal requirement necessary to produce the very first, preliminary but fondamental informations in this entirely unexplored field. It should, by no means, be considered as a complete request for 1983.

(D. Garreta)