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MEMORANDUM

Copy to/Copie à:  
K. Kilian

To/A : Prof. P.G. Hansen

From/De : Experiment PS182

Subject/: LEAR setting-up time in 1983  
Objet

In reply of your letter PSCC/82-66, PSCC/ML26 we like to tell you our wishes for LEAR in 1983.

We estimate that a period of two weeks (preferential splitted into two parts) at low intensity ( $\sim 10^5 \bar{p}$ 's/s) is reasonable for the setting-up of the telescope, multiplicity-counters, the lead-glass array and the BGO-spectrometers.

Before the final data-taking the performances of both spectrometers should be tested under running conditions. Thus for the final setting-up we request 10 days in a later period (i.e. begin of September) with a higher intensity ( $\sim 5 \cdot 10^5 \bar{p}$ 's/s). In this final setting-up period the performances of the Jacobian lead-glass spectrometer will be tested through known two bodies annihilation channels, such as  $\pi^0\omega$ ,  $\eta\omega$ ,  $\eta'\omega$ . The two BGO spectrometers, which are the first of their kind used in high energy-physics, will be tested through the shape of the inclusive  $\gamma$ -spectrum. Parallel to this setting-up time we expect to obtain the following physics results:

i) The shape of the inclusive  $\pi^0$ ,  $\eta$  and  $\eta'$  spectra. The understanding of the shape of these spectra measured with our equipment is important for our search for narrow states. In addition there is theoretical interest for the inclusive production of  $\eta$  and  $\eta'$  mesons.

ii) Some so far unobserved annihilation channels like  $\pi^0\phi^0$ ,  $\eta X$ ,  $\eta' X$ , which will provide additional calibration points to the Jacobian spectra.

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iii) The reactions  $\bar{p}p \rightarrow \gamma\gamma$ , which apart from its own intrinsic interest could serve as calibration standard at higher energies for the two BGO-spectrometers.