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To/A : the EEC

From/De : QMC-DNPL-RHEL Collaboration

Subject/: The status of and future plans for Experiment S124
Objet

The current situation and future plans for S124 may-be outlined briefly as follows:

- 1) The electronic trigger rate in the experiment is under control, and has been examined throughout the proposed momentum range (1.2-2.4 GeV/c). It is ~6 triggers/pulse for ~40% of the PS intensity spilled on target 1.
- 2) The final piece of hardware - a J-shaped wire spark chamber around the cryostat of the polarized target - was installed, and made to work during PS weeks 13-16 (29th March-19th April). It is clear, from test data collected before the December 1972 shutdown, that this detector is essential for the selection of $\bar{p}p \rightarrow \pi^+ \pi^-$ events.
- 3) The polarized target (10 cm x 3.5 cm \emptyset of propanediol) produces an average polarization of ~70%. This has been checked by collecting p-p elastic scattering data at 1.38 GeV/c. A preliminary analysis of the polarization agrees with existing experiments. This data will be used to survey the distribution of the polarization throughout the target volume.
- 4) Some data was collected (weeks 13-16) on $\bar{p}p \rightarrow \pi^+ \pi^-$ at 1.6 GeV/c ~5000 events predicted from known acceptances and cross sections. Events have been selected from correlations in the spark chamber arrays external to the magnetic field of the polarized target, but these selected candidates for $\pi^+ \pi^-$ have not yet been passed through a full fit which includes the coordinate information from the detector in the magnetic field. Simulated Monte Carlo events has passed through this analysis and yield a clear $\pi^+ \pi^-$ signal.
- 5) In the proposal PH1/COM 72/2 we requested 6 PS weeks of data collection in order to obtain ~5000 $\pi^+ \pi^-$ events at ten momenta (1.2-2.4 GeV/c). We have achieved ~1 PS week of data collection so far. In order to overlap more fully with the data of S99 we would like to add two more momenta below 1.2 GeV/c. Also the analysis of experiment S99 indicates that we may expect rapid changes* in the value of the asymmetry parameter A, over $\Delta(\cos \theta^*) \sim 0.1$. We propose to double our statistics to ~10,000 events at as many momenta as possible in order to measure this variation of A.

- 6) We request to be permitted to collect data during the additional PS periods already scheduled for target 1 (weeks 30-33 and 39-42), plus the last period (weeks 47-51) should it be scheduled for target 1