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To: The SPSC

From: J.D. Dowell, Spokesman WA12

Subject: Status report on Experiment WA12 (Beam Dump in Omega)a) The present experiment

The experiment started on January 7th and has run for the first 5 weekly periods of 1977, during which ψ production from a 39.5 GeV/c negative beam has been studied. The first $3\frac{1}{2}$ days of the 6th period will be used for positive beam running. The time is summarized as follows:

Allocated time (excluding machine S.U)	26 $\frac{1}{2}$ days
Beam-on time during first 5 periods	15 "
Time remaining	3 $\frac{1}{2}$ "

This time has to be compared to the proposal request of 15 days. However the repetition time is 8.4 seconds compared to 6.0 seconds assumed in the proposal and the effective spill time about 300msec (1/3 of that assumed). Furthermore we find that the beam has been present for only 50-70% of the apparent beam-on time. Consequently our integrated flux is low by a factor 6-8 compared to the proposal assumption and our statistics are correspondingly reduced. The beam contains $\sim 2.5\%$ \bar{p} and $\sim 3.0\%$ K^- , and we have run with fluxes of $\sim 3 \times 10^6$ per pulse.

We now expect approximately 700 ψ 's from π s and ~ 20 each from \bar{p} and K^- . These numbers are based on an analysis (using ROMEO at the 7600) of almost half the data. The π numbers compare favourably with the best pion experiments so far reported.

We shall be able to quote cross sections for \bar{p} and K^- relative to pions when allowance is made for background and x-acceptance. The positive running should allow a similar number of proton ψ 's to those from antiprotons to be obtained since the positive beam contains $\sim 25\%$ protons.

Our success in analysing the data so far encourages us to process the remaining data on the 7600 as the total amount is much lower than anticipated. This will allow us to obtain results in a matter of weeks whereas implementing the programs at Paris and Rutherford would take 2-3 months. Further processing at those centres will almost certainly be necessary as well as Monte Carlo calculations. About 30 hours of 7600 time are required. The experiment has performed very closely to our expectations in terms of yield and triggering rate.

b) Future plans

We are now considering requesting further running of the beam dump experiment. Most probably this would be at 80 GeV/c in the H1 beam where it appears possible to identify antiprotons but not kaons. This would complement our present run at 40 GeV/c and give important information on energy dependence for antiproton ψ s. It may also be desirable to take further data at 40 GeV/c. Hopefully the spill conditions will improve in the future. We tentatively aim at running again in the late summer or early autumn. We are still very interested in the idea of a photon beam dump experiment and are studying the feasibility of this in view of the limitations imposed by the proton intensity and energy in the West Hall.

Beam Dump Collaboration