

Scientific Spokesman:

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Quark Search (By Measuring Ionization Energy Loss)  
Using 400-500 GeV

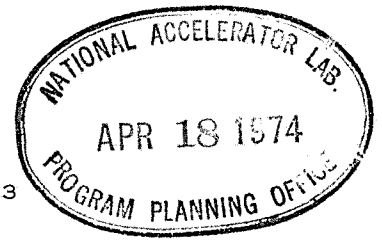
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April 14, 1974

Dr. J. Sanford  
National Accelerator Laboratory  
P.O. Box 500  
Batavia, Illinois 60510

Dear Jim:

This note is to remind you again about the continuation of E72, a quark search, that we have discussed from time to time. The primary purpose of this continuation is to examine the higher energy regions from above 300 GeV where we ran before to the 400 or more GeV that you will be running at soon.

As you know we have been planning, at your suggestion, to run in the hadron beam in the neutron area. To this end we have a porta-kamp set up near enclosure 114 where there is a 10' gap in the beam line. I have just spent 3 days at NAL learning how to run that beam. We are planning, during the first week in May, to run the cables to the enclosure and to set up the counter next to the beam. At any time that the beam is available with any sort of intensity we can time in the counters and check out the apparatus again.

When you run at 400 or more GeV, hopefully in May, we could then do the following two searches. We would spend about one half of the time looking for less than unity charged particles (i.e.  $1/3$  and  $2/3$ ). The other time would be spent looking for  $4/3$  charged particles. We estimate that with an intensity of about  $5 \times 10^4$  particles/pulse and a spill time of about 200 milliseconds we would need about 24 hours of good running time to do a reasonable job on the physics. Stan Pruss and Russ Huson believe that there will be no trouble delivering that kind of intensity. Our focussing requirements are small. The settings for the chamber are almost good enough but we plan to simply change the currents so that the focus at enclosure 110 is moved back to 114. Russ believes that the measured coefficients that they have are good enough to do this by dead-reckoning. Since the beam is already almost good enough I agree with him.

We look forward to running in May and I am sure that with this very little investment in time we will know considerably more about quark production or the lack of it. I can remember when the cyclotrons just passed the threshold for  $\pi$  production.

Yours truly,

L. B. Leipuner

LBL/md

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