

744/652



Fermi National Accelerator Laboratory  
P.O. Box 500 • Batavia, Illinois • 60510  
312-840-3211 FTS 370-3211

Directors Office

December 14, 1985

Professor Frank Merritt  
Enrico Fermi Institute  
University of Chicago  
5640 S. Ellis Ave.  
Chicago, Illinois 60637

Professor Frank Sciulli  
Nevis Laboratories  
P.O. Box 137  
Irvington, New York 10533

Dear Franks,

The PAC, in its December meeting, recommended that we continue the quad-triplet neutrino beam run with a goal of obtaining  $5 \times 10^{17}$  protons on target. Thus, E-744 is extended at least through the next fixed-target run. The Committee was impressed with the capabilities of this experiment to study same-sign dileptons, to measure structure functions at higher energies and to search for new phenomena in neutrino interactions. I concur in all of this.

The Committee felt that the addition of flash ADC's to the drift chambers in E-744 would enhance the capabilities of this detector and should be implemented if possible. Averaging over the PAC discussion on this point, I conclude that we'll have to study the costs carefully in the context of all the other demands on our limited budget. Anything you can do to limit the costs to Fermilab will directly benefit your chances of implementing this modification.

Congratulations on making a persuasive case for wide-band running. I wish us all luck on the next run.

Sincerely,

Leon M. Lederman

cc: B.Williams  
TY/RR  
Bj/DJ  
KCS  
PNG  
RLD  
TDWK  
HTE  
JRD  
G.Knapp, URA  
G.Charlton, DOE  
D.Berley, NSF

652/744

# Columbia University

DEPARTMENT OF PHYSICS

NEVIS LABORATORIES

P.O. Box 137  
Irvington, N.Y. 10533  
914-591-8100

November 7, 1985

Dr. Leon M. Lederman  
Director  
FERMILAB, P.O. Box 500  
Batavia, IL 60510

Dear Leon:

First and foremost, we would like to thank you and the entire Laboratory staff for your important efforts in ensuring that our E744 run was able to accumulate such a large number of events. We are quite busy with the analysis of that data, but simultaneously we have been giving serious attention to the running conditions for the next beam period.

You will recall that our previous request was to run with the dichromatic beam during E652. This seemed a necessary complement to obtain absolute normalization for charged currents, measure the neutral current coupling, and to provide additional checks on systematics. We have gone through a re-evaluation, taking into account several factors:

- (a) the new physics situation with regard to previous discrepancies in measurements of the total cross sections;
- (b) now existing measurements of the Weinberg angle in dichromatic beams;
- (c) our successful development of flash ADC's for use with our drift chambers.

This appraisal leads us to the conviction that a dichromatic run will not significantly add to our physics capabilities, but that a major run with the Quad Triplet beam using our apparatus upgraded with flash ADC's will provide important increased precision on charged currents and multimuons, a unique statistical sample of high energy neutral currents, cross checks on apparatus performance, and physics windows on possible new phenomena.

For these reasons, we are requesting that the next running period be devoted to running with the Quad Triplet beam with the goal of at least doubling the present event

Dr. Leon M. Lederman  
Director, FERMILAB

sample size. We will elaborate on our rationale at the PAC presentation, scheduled for the morning of December 12. We have communicated with Ken Stanfield our needs for the next running period.

Thank you again for your help and support.

Sincerely,



Frank Sciulli



Wesley Smith

for E652

cc: Chicago/F. Merritt  
Rochester/A. Bodek  
Fermilab/E. Fisk

copy to: K. Stanfield