

Stony Brook

Department of Physics
State University of New York at Stony Brook
Stony Brook, NY 11794
telephone: (516) 246-6580

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April 6, 1981

We look forward to your response.

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

Sincerely,


Michael Marx
for the LAFDUC Collaboration
(Large Angle Physics 90 Group)

Dear Leon,

This letter is in response to your request for ideas regarding a second interaction region at DG. A group of physicists from Brookhaven, Brown and Stony Brook have been involved in discussions over the past two years aiming at a modestly ambitious effort for ISABELLE. Out of these discussions have evolved a conceptual design for an experiment which concentrates on high resolution studies of electrons and photons. With the presently anticipated slowdown of ISABELLE construction pushing high luminosity p-p collisions into the late 1980's and the possibility now of a second colliding area at the Tevatron, we feel it is worth exploring the advantages of proposing our experiment first for 2000 GeV pp interactions at FNAL, and then moving it after some finite time to ISABELLE. We feel that this scenario would contribute to the physics programs at both machines - for example we expect to have good enough resolution to measure the Z^0 width at FNAL, while at Brookhaven, with higher luminosity, we would be able to push studies of photons and π^0 's to much higher p_{\perp} . A discussion of the salient features of the experimental design, the physics goals and rationales, and our present status regarding detector and magnet development is attached.

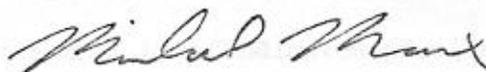
The detector we envision is approximately 5m high by 7m wide by 9m along the beam. Clearly this is somewhat tight for the given dimensions, but minimal scale up of the hall or scale down of the experiment would suffice. The entire system, magnet, lead glass and track chambers, weighs less than 600 tons. The experiment would disassemble relatively easily - we envision each lead glass array, and each magnet half rolling in separately. The Main Ring vacuum pipe causes us no problem, and if necessary, beam in that pipe could be trivially shielded from our field.

We feel that this type of experiment which seeks to do high resolution electromagnetic studies, is a natural complement to a major facility which will study

more global physics. We stress that no presently envisioned experiment at the SPS or FNAL has sufficient resolution to measure the Z^0 width. If encouraged by the FNAL administration to proceed, we would expect to submit a formal proposal in a few months. In this period we would do the designs and studies relevant to the collider environment, cost estimates, and the expansion of the collaboration necessary to mount an effort such as this. We feel it is possible to have at least the electromagnetic calorimeter array in place by late 1983, to be followed by the magnet shortly afterward.

We look forward to your response.

Sincerely,



Michael Marx
for the LAPDOG Collaboration
(Large Angle Photon DO Group)

Brookhaven: L. Ahrens, S. Aronson, B. Gibbard, H. Weisberg, P. Yamin
Brown: D. Cutts, R. Lanou
Columbia: P. Franzini
Stony Brook: R. Engelmann, J. Lee-Franzini, M.L. Good, P. Grannis, J. Kirz,
M. Marx, R. McCarthy