

Proposal to Search for
Proton Produced Particles
Decaying Under Prompt
Emission of One or More Muons

FNAL Proposal # 413

(NU Proposal #365B)

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PROPOSAL TO SEARCH FOR PROTON PRODUCED PARTICLES DECAYING UNDER PROMPT EMISSION
OF ONE OR MORE MUONS

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We propose to measure the reactions

$$p + p \rightarrow X^+ + p \rightarrow \mu + X' + p \quad (1)$$

or $\mu\mu + X'' + p$

to examine possible structure in the X^+ mass spectrum. In this experiment a slow proton at large angle and one or more muons in the forward direction are detected.

Such structure might arise, for example, from a reaction of the type

$$p + p \rightarrow DB_C p \rightarrow \mu X' p. \quad (2)$$

Here B_C might be a charmed baryon, D a charmed meson. Either particle could decay and give rise to one or more muons in the detector. The experiment is similar, except for the incident particle, to Northeastern University proposal 365A, and should follow that experiment.

The experiment requires 200 hours of beam time with 10^7 protons per pulse at 300 GeV or 400 GeV. The sensitivity of this experiment to reactions of type (2) is approximately 5 nb. Test data have already been taken and have shown the feasibility of the experiment. For further details, see Northeastern University Proposal 365A and references cited therein.