Request for Extension

A PROPOSAL TO STUDY MUG1 PAIR PRODUCTION IN \( \pi^- \) INTERACTIONS

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Request for Extension

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A PROPOSAL TO SEARCH FOR NAPOX MASS STATES ASSOCIATED WITH
SINGLE MUG1 PRODUCTION IN \( \pi^- \) INTERACTIONS

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We request an extension of 300 hours at 150 pps.
This will allow us to double the number of dimuon
pairs we will obtain.
We are requesting an additional 300 hours of data taking at 150pps for experiments EL23/A and EL23/B. The request is principally for EL23/A, the study of muon pair production in the low mass region. As in the completed data taking, production of forward going muon pairs will be studied from interactions of 160GeV $\pi^+$ and $\pi^-$ beams with a liquid hydrogen target in the streamer chamber. The requested time of 300 hours will allow us to double the number of events of our exposure.

During data taking on EL23A we will also increase the number of events for EL23/B, our narrow mass search. We will restrict our trigger in this experiment to single muons with a $P_\perp$ greater than 300 MeV/c.

Status Report

During the May-June running period we obtained an exposure of about 2.2 x $10^7$ pp interactions in 200 hours of running. In the same length of run in October and November we doubled our interaction rate and now have a total of 6.6 x $10^7$ pp interactions.

In a previous request for extension we had proposed that a portion of our events be obtained with a deuterium target to enhance our data rate. Our reason for doing this was that the number of incident pions per pulse is limited in part by deterioration of picture quality due to delta rays. The number of delta rays from hydrogen and deuterium would be the same while the interaction rate in deuterium would be doubled. In those events in which there is a single missing neutral it is possible to make one constraint fits when a hydrogen target is used while this is not possible with deuterium. It will be of great interest to examine our data sample for such events as

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\pi^- p \rightarrow \mu^- \mu^+ \gamma \\
\pi^+ p \rightarrow \mu^+ \mu^- \gamma
\]

Our interest in a search for such decay modes as a source of the dimuon pairs leads us to restricting our data taking to hydrogen.
Our experiment is sensitive to forward going muon pairs in the $x$ region between $0.25$ and $1$. We are finding pairs at the level of $10^{-5}$ in this region. We are presently measuring frames with single events present which comprise about half of our total. It is clear, however, that the double events frames can be measured. This will bring us a total of 600 dimuon pairs from the data taking already completed and the 300 hours we are requesting will allow us to double this number.