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M E M O R A N D U M

To : Members of the SPSC
 From : WA21 Collaboration
 Subject: Wideband Neutrino Beam for 1983 runs

It is expected that the wideband beam will operate in Periods 4 and 5 of 1983 and that our experiment WA21 will run during period 5. If the beam is operated with 450 GeV protons then the secondaries will have to be collimated down to a smaller angle in order to reduce the background of leakage muons to an acceptable level at the detectors. We understand that collimation to 5 mrad would satisfy this requirement. We wish to insist that the collimation angle is not reduced below this figure since the corresponding losses in neutrino and antineutrino fluxes are severe (see A.E. Ball, CERN/EP/NBU 82-4). For our studies of neutral currents, structure functions and charm production we require the maximum possible statistics over essentially the entire energy range of the beam. If the collimator is closed from 5 mrad to 3 mrad then we suffer a 40% loss of event rate per proton. This is clearly unacceptable.

If the neutrino beam were operated with 400 GeV protons and the 8 mrad collimator then we would obtain approximately the same yield of events per proton as at 450 GeV with the 5 mrad collimator. However in this case we would prefer 450 GeV because of the higher mean energy of the events and correspondingly larger charm production cross section, better EMI performance, etc.