a ν scattering experiment. The D^0 produced in the "primary" reaction $\nu + N \to \mu^- + D^0 + X$ may switch into a $\bar{D}^0$ which then decays into $\mu^- + \bar{\nu} + X'$. It is important to substantiate these events since, as we have seen, in order to obtain an adequate D^0-$\bar{D}^0$ mixing one needs either more than four quarks or a charm-changing neutral current. It should be noted however, that (e.g., model D) with a charm-changing neutral current D^0 and $\bar{D}^0$ may decay into a $\mu^+\mu^-$ pair (perhaps accompanied by hadrons). One would thus expect to observe "trilepton" events

$$\nu + N \to \mu^-\mu^+\mu^- + X.$$

Such events have not been seen thus far.[14] Of course, the neutral charm-changing current can be made small (i.e., $\alpha \approx 0$ or $\frac{\pi}{2}$ in model D) without substantially changing ν from 1.

In summary, the observation of substantial[30] number of $\mu^-\mu^-$ events (compared to $\mu^+\mu^-$ events say) and the nonobservation of $\mu^-\mu^+\mu^-$ events would suggest the presence of degrees of freedom "beyond charm."

f) Off-diagonal neutral currents:

Other effects of a charm-changing neutral current include direct $\Delta C = 2$ decay of charm baryons (not so easy to observe!) and apparent lepton nonconservation such as in the process

$$\nu + N \to \mu^+ + X.$$

This process could come about by neutral current production of D^0

$$\nu + N \to \nu + D^0 + X'(C = 0)$$