even under CP. This gives $\Delta\lambda/\lambda \approx 1$. For a massive $D^0, \bar{D}^0$ system, on the other hand, it is likely that many open channels, with both signs for CP, are important and that $\Delta\lambda/\lambda$ is small. As for $\Delta m/\lambda$ the second order contributions which come from channels which are nearly open, i.e., from intermediate states near the mass shell, are similarly expected to be small. The issue of substantial mixing therefore hinges on the following two effects: (i) Substantial second order contributions from closed channels ranging far off the mass shell -- in the extreme, contributions from the ultra-violet region, analogous to the effects discussed earlier for the $K^0, \bar{K}^0$ system, where the object was to suppress such effects. (ii) Direct first order interactions which couple D^0 and $\bar{D}^0$, such as would arise if there were "charm" changing neutral currents;[13] this would produce essentially complete mixing, $\Delta m/\lambda >> 1$, hence $r \approx 1$. $r \approx 1$ was suggested by DeRujula, Georgi, and Glashow[9] as a possible explanation of "wrong-sign" dimuon events.[14]

Let us now consider several models which may serve to illustrate the various possibilities. We characterize the models sufficiently by displaying the weak SU(2) doublets, left- and right-handed.

A: $\begin{pmatrix} p \\ n^c \end{pmatrix}_L , \begin{pmatrix} p' \\ \lambda^c \end{pmatrix}_L$

B: $\begin{pmatrix} p \\ n^c \end{pmatrix}_L , \begin{pmatrix} p' \\ \lambda^c \end{pmatrix}_L ; \begin{pmatrix} p' \\ n \end{pmatrix}_R .$

C: $\begin{pmatrix} p \\ n^c \end{pmatrix}_L , \begin{pmatrix} p' \\ \lambda^c \end{pmatrix}_L ; \begin{pmatrix} p'' \\ x \end{pmatrix}_L ; \begin{pmatrix} p \\ x \end{pmatrix}_R , \begin{pmatrix} p' \\ n \end{pmatrix}_R , \begin{pmatrix} p'' \\ \lambda \end{pmatrix}_R$