might arise from CP violation. Suppose that the state D^0 is produced at the initial time, so that initially the decay $\mu^+ + \bar{\nu}_\mu$ + ordinary hadrons is allowed, the decay $\mu^- + \nu_\mu$ + ordinary hadrons forbidden. As time goes on that state acquires an admixture of $\bar{D}^0$, for which the selection rules are reversed. With an eye to later phenomenological applications we therefore take as a conventional measure of mixing the time integrated ratio of μ^- and μ^+ events,

$$r = \frac{N(\mu^- + \bar{\nu}_\mu + X)}{N(\mu^+ + \nu_\mu + X)} .$$

It is the CP even and odd combinations of D^0 and $\bar{D}^0$ that have definite decay rates and masses. Let λ devote the average of the two decay rates, $\Delta\lambda$ the differences; and let Δm denote the mass difference. The central mass is presumably large compared to the masses of ordinary mesons, so one expects that there are many open(and closed) channels available that couple importantly to D^0 and/or $\bar{D}^0$. The differences $\Delta\lambda$ and Δm arise only from these transitions, real and virtual, which couple D^0 and $\bar{D}^0$ to common states.

In the absence of mixing, $r = 0$. For small mixing ($\Delta\lambda/\lambda \ll 1$, $\Delta m/\lambda \ll 1$) one has[12]

$$r \approx \frac{1}{8}\left(\frac{\Delta\lambda}{\lambda}\right)^2 + \frac{1}{2}\left(\frac{\Delta m}{\lambda}\right)^2 .$$

For the K^0-$\bar{K}^0$ system there is the special circumstance that, overwhelmingly, the most important open channel is the 2π state, and this is