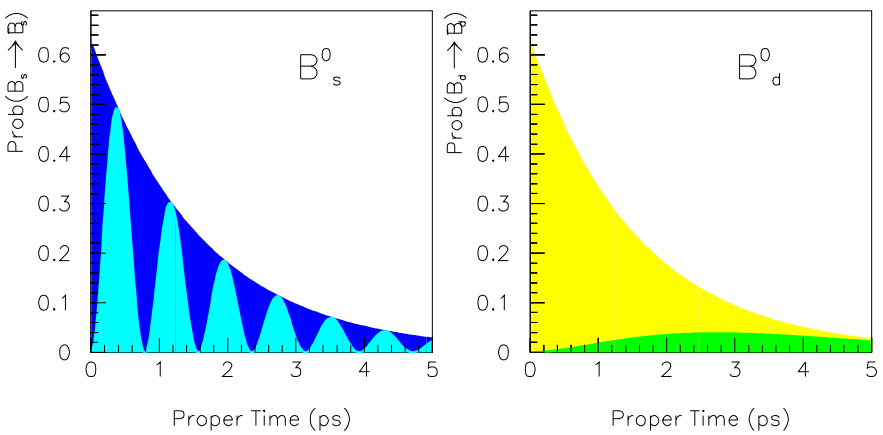
Formalism and motivations

- Mass eigenstates : linear combinations of the weak eigenstates
- Solving the Schrodinger Eq.

$\rightarrow$

$$\mathcal{P}(\mathrm{B}^0\ (t=0) \rightarrow \mathrm{B}^0\ (t))) = \frac{1}{\tau}\, e^{-t/\tau}\, \frac{1+\cos(\Delta m t)}{2}$$

$$\mathcal{P}(\mathrm{B}^0\ (t=0) \rightarrow \bar{\mathrm{B}}^0\ (t))) = \frac{1}{\tau}\, e^{-t/\tau}\, \frac{1-\cos(\Delta m t)}{2},$$

where :

- τ is the neutral B meson lifetime
- CP violation is neglected
- $\Delta\tau = 0$
- Δm is the mass difference between the two mass eigenstates