$$\Omega = \begin{pmatrix} P_{AA} & P_{AB} \\ P_{BA} & P_{BB} \end{pmatrix}$$

$P_{A\to A} = P_{AA}$

$P_{A\to B} = P_{AB}$ ...

At equilibrium, the prob. of being at each state do not change over time

Let π_A and π_B be the eq. prob of being in states A and B

The eq. conditions can be written as:

$$\pi_A = \pi_A \cdot P_{AA} + \pi_B \cdot P_{BA}$$

$$\pi_B = \pi_A \cdot P_{AB} + \pi_B \cdot P_{BB}$$

The normalisation condition:

$$\pi_A + \pi_B = 1$$

$$\pi_A = \pi_A \cdot P_{AA} + (1 - \pi_A) \cdot P_{BA}$$

$$\pi_A = \pi_A P_{AA} + P_{BA} - \pi_A \cdot P_{BA}$$

$$\pi_A - \pi_A P_{AA} = P_{BA} - \pi_A P_{BA}$$

$$\pi_A - \pi_A P_{AA} + \pi_A P_{BA} = P_{BA}$$

$$\pi_A (1 - P_{AA} + P_{BA}) = P_{BA}$$

$$\pi_A = \frac{P_{BA}}{1 - P_{AA} + P_{BA}}$$

$$\pi_B = 1 - \pi_A$$

$$\pi_B = 1 - \frac{P_{BA}}{1 - P_{AA} + P_{BA}}$$

Verify: $1 - \left[\frac{0{,}02}{\underbrace{1 - 0{,}982 + 0{,}02}_{0{,}038}} \right] \quad 0{,}52631579$

$$1 - 0{,}52631579 = 0{,}47368$$