

Balance laws



$$N_a(t + \Delta t) \approx N_a(t) + [J_a(t) + \mathcal{R}_a(t)] \Delta t$$

$$N_b(t + \Delta t) \approx N_b(t) + [J_b(t) + \mathcal{R}_b(t)] \Delta t$$

Constitutive relations



$$\mathcal{R}_a(t) = -\lambda N_b(t)$$

$$\mathcal{R}_b(t) = \lambda N_a(t)$$

Boundary conditions



$$J_a = 0 \text{ mol/s}$$

$$J_b = 0 \text{ mol/s}$$

