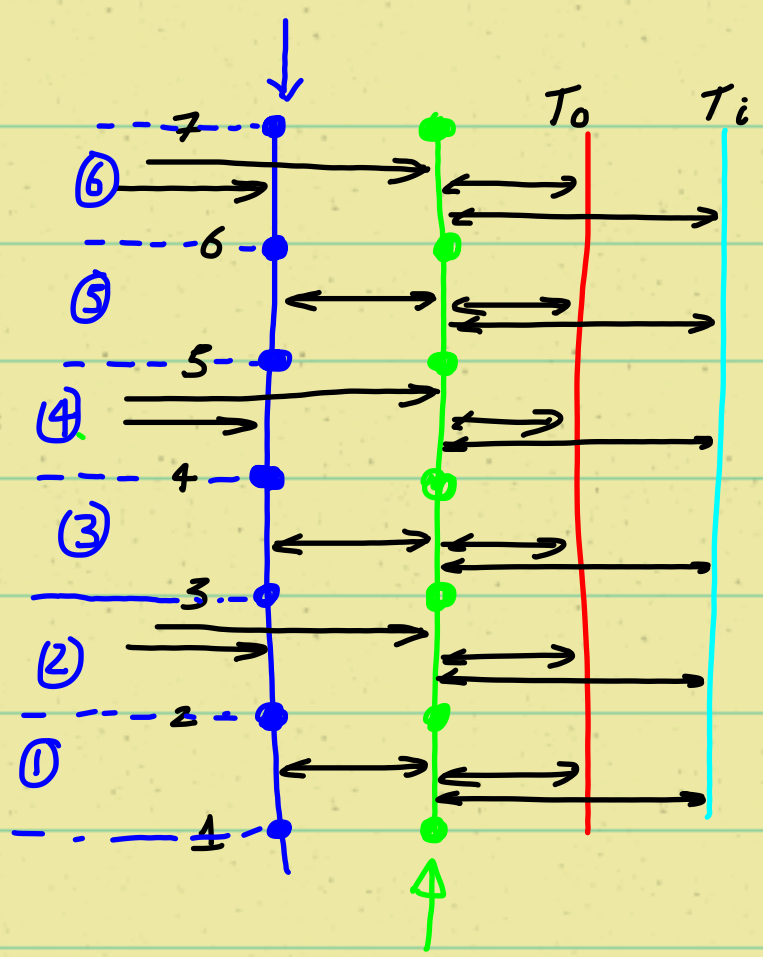

Set up for 3 modules

θ_i = Temp. of water at node "i"

ϕ_i = Temp. of air at node "i"

given → $\theta_1 (\theta_{2N+1})$, ϕ_1 .

We have 2N finite volumes

Apply cons. of energy in each

For the "i"th volume (odd)

$$\dot{m}_w C_{pw} (\theta_{i+1} - \theta_i) = q^i_{wa} = h^i_{wa} A \left(\frac{\phi_{i+1} + \phi_i}{2} - \frac{\theta_{i+1} + \theta_i}{2} \right)$$

$$\dot{m}_w C_{pw} (\theta_{i+1} - \theta_i) - h^i_{wa} A \left(\frac{\phi_{i+1} + \phi_i}{2} - \frac{\theta_{i+1} + \theta_i}{2} \right) = 0$$

$$\dot{m}_a C_{pa} (\phi_{i+1} - \phi_i) = -q^i_{wa} + q^i_i + q^i_e = - h^i_{wa} A \left(\frac{\phi_{i+1} + \phi_i}{2} - \frac{\theta_{i+1} + \theta_i}{2} \right)$$
$$+ h^i_i \left(T_i - \frac{\phi_{i+1} + \phi_i}{2} \right) A$$
$$+ h^i_e \left(T_e - \frac{\phi_{i+1} + \phi_i}{2} \right) A$$

Write the same eqns. for the even region