

(4)

Ges.  $T(x,t) \in C^{2,1}(Q) \cap C(\bar{Q})$ :

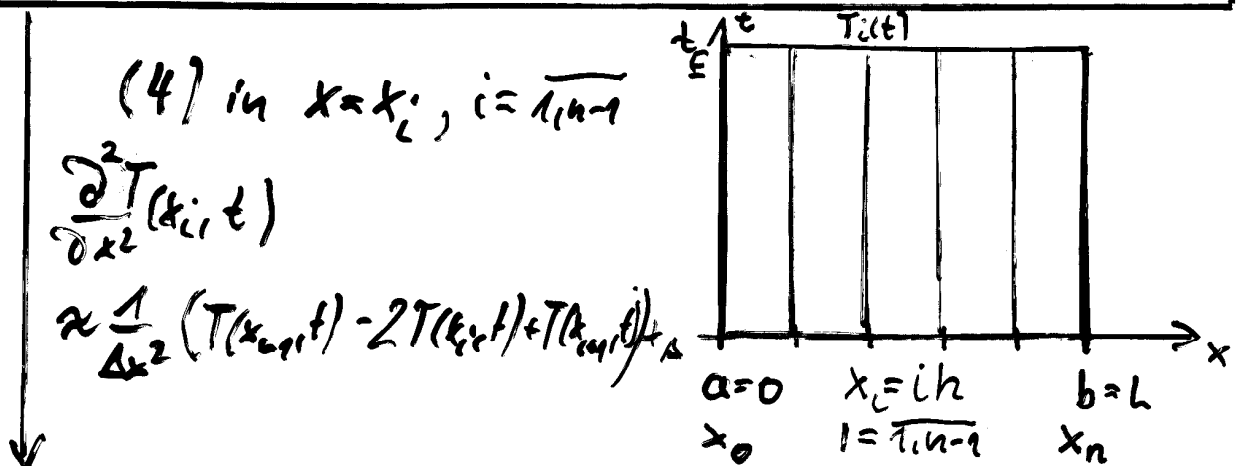
$$\frac{\partial T}{\partial t}(x,t) - \alpha \frac{\partial^2 T}{\partial x^2}(x,t) = 0 \quad \forall (x,t) \in Q := (0,L) \times (0,t_E),$$

$$RB: T(0,t) = T_a(t), T(L,t) = T_b(t) \quad \forall t \in (0,t_E]$$

$$AB: T(x,0) = T_A(x) \quad \forall x \in [0,L]$$

$\alpha := \lambda / \rho c$  - Temperaturleitzahl

ARWA



(5)

Ges.  $T_i(t), i = \overline{1, n-1}, t \in (0, t_E)$

$$\frac{dT_i(t)}{dt} = \alpha \frac{T_{i-1}(t) - 2T_i(t) + T_{i+1}(t)}{\Delta x^2}$$

$$T_0(t) = T_a(t), T_n(t) = T_b(t), t \in (0, t_E)$$

$$T_i(0) = T_A(x_i), i = \overline{0, n}$$

Ges.  $\underline{T}(t) = (T_1(t), \dots, T_{n-1}(t))^T$

$$\frac{d\underline{T}(t)}{dt} = -K \underline{T}(t) + \underline{b}(t)$$

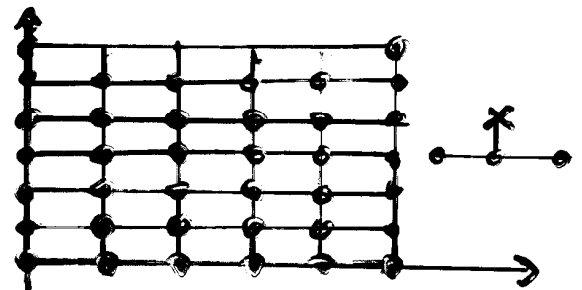
$t \in (0, t_E)$

$$\underline{T}(0) = \underline{T}_A$$

AWA

(5) in  $t = t_j, j = \overline{0, m-1}$

$$\frac{dT_i(t)}{dt} \approx \frac{T_i(t_{j+1}) - T_i(t_j)}{\Delta t}$$



(6)

$$\frac{T_i^{j+1} - T_i^j}{\Delta t} = \alpha \frac{T_{i-1}^j - 2T_i^j + T_{i+1}^j}{\Delta x^2}, i = \overline{1, n-1}, j = \overline{0, m-1}$$

$$RB: T_0^j = T_a(t_j), T_n^j = T_b(t_j), j = \overline{0, m}$$

$$AB: T_i^0 = T_A(x_i), i = \overline{0, n}$$

Euler rückwärts