UNIVERSIDADE DE SÃO PAULO – PIRASSUNUNGA

ZEB0562
CÁLCULO NUMÉRICO

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DEPTO. ENGENHARIA DE BIOSSISTEMAS

USP

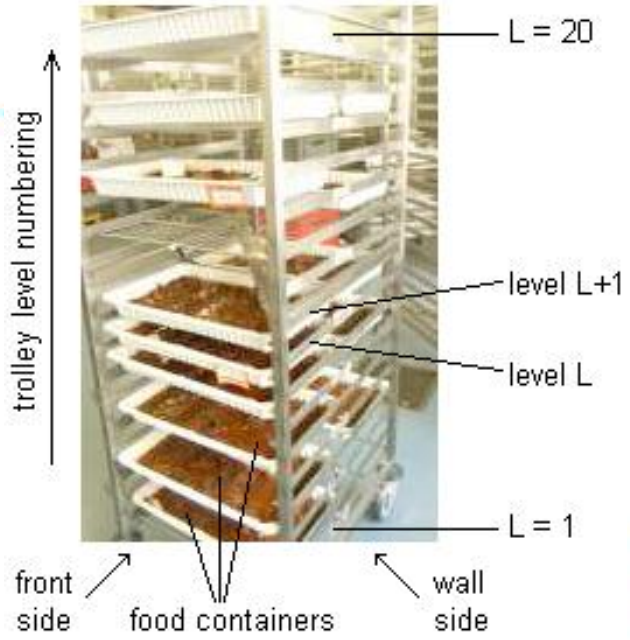
FZEA

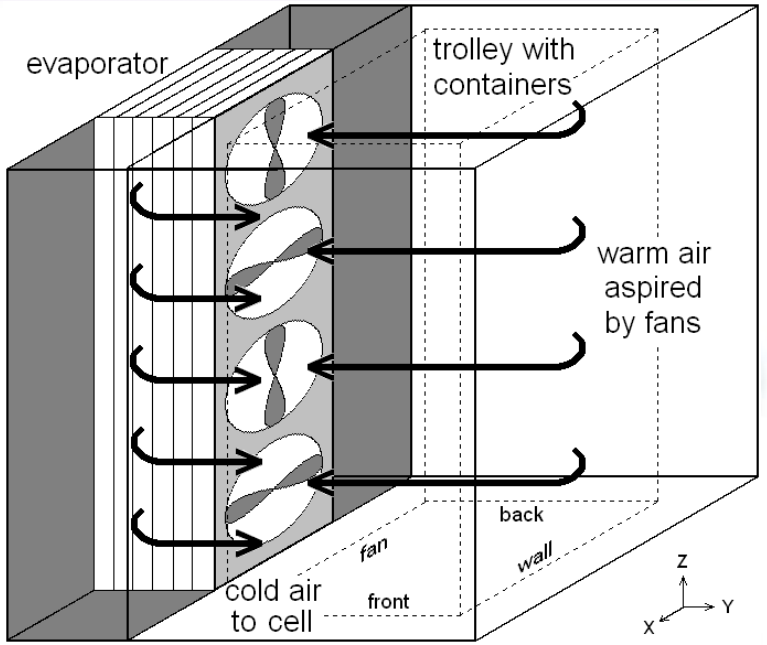
ZEB0562 – TÓPICO 08: PARTE 5/5

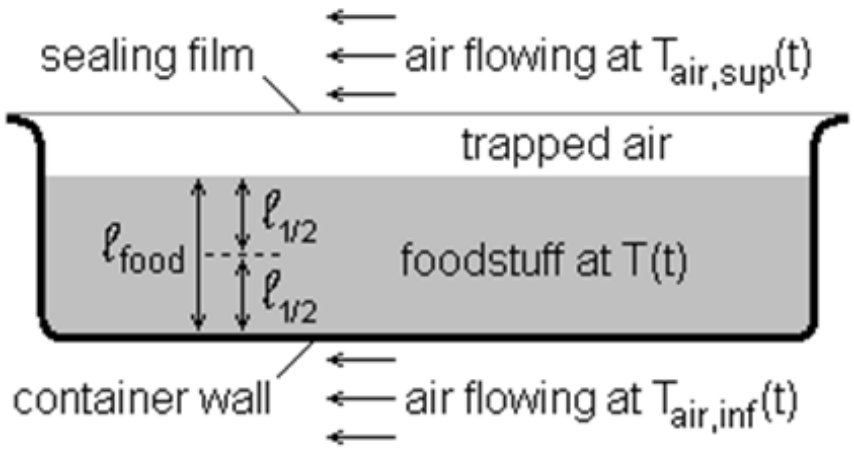
PVI – EDO ORDEM 1: HANDS-ON TASK

- RESFRIAMENTO RÁPIDO DE REFEIÇÕES
- MODELO MATEMÁTICO → PVI-EDO ORDEM 1
- T_{air} = CONSTANTE ↔ SOLUÇÃO ANALÍTICA

Resfriamento de refeições: obter $T(t)$



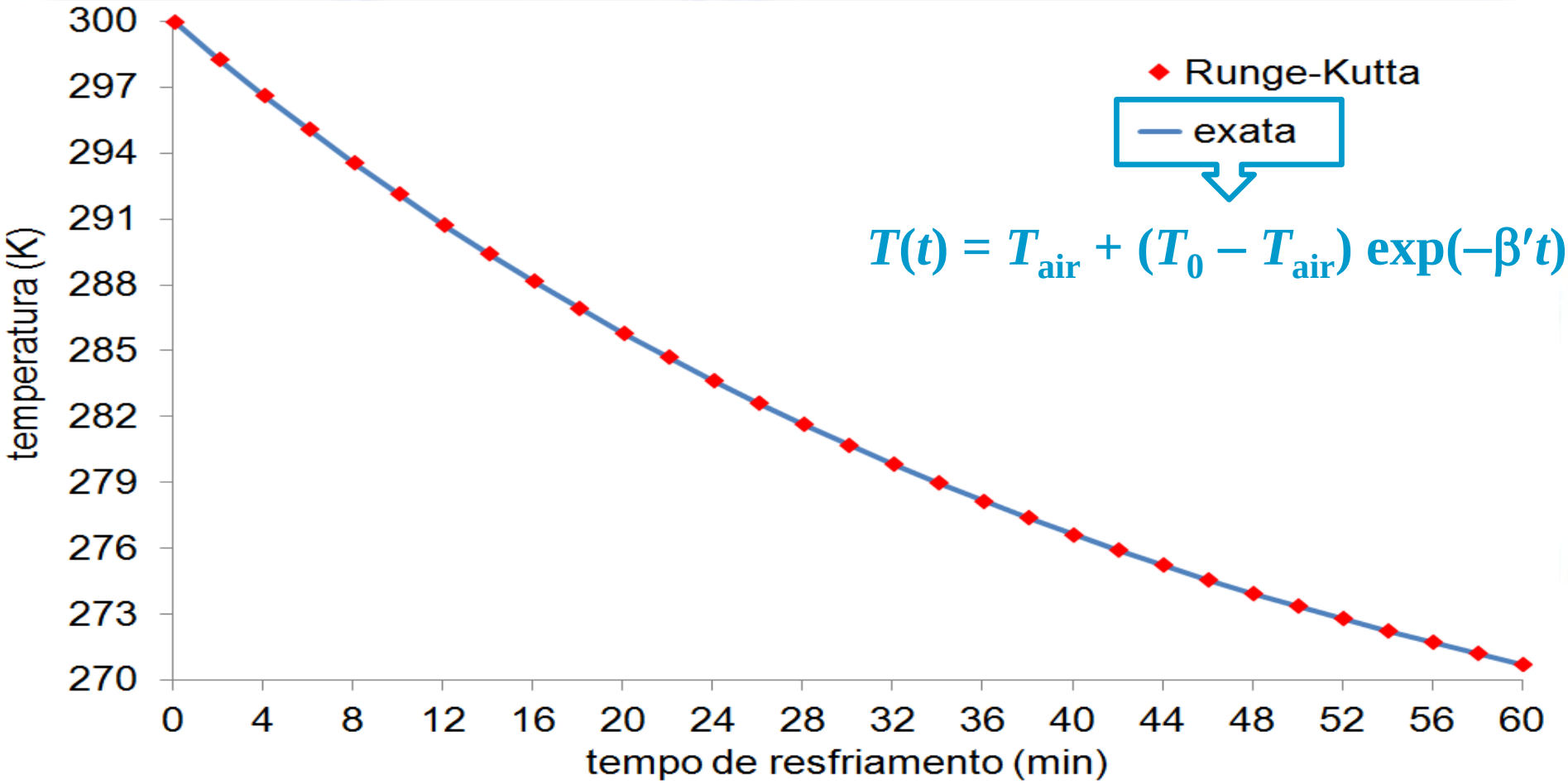




$$\frac{dT(t)}{dt} = \beta' \left[T_{air} - T(t) \right]$$

$$\beta' = \frac{1/(\rho c l_{1/2})}{1/h_c + l_{1/2}/k} \quad , \quad T(0) = T_0$$

Resfriamento de refeições: T_{air} = const



ρ , kg/m^3	c , J/(kg·K)	k , W/(m·K)	$l_{1/2}$, m	h_c , W/(m^2·K)	T_{air} , K	T_0 , K
1014.4	3545.5	0.488	0.015	50	260	300