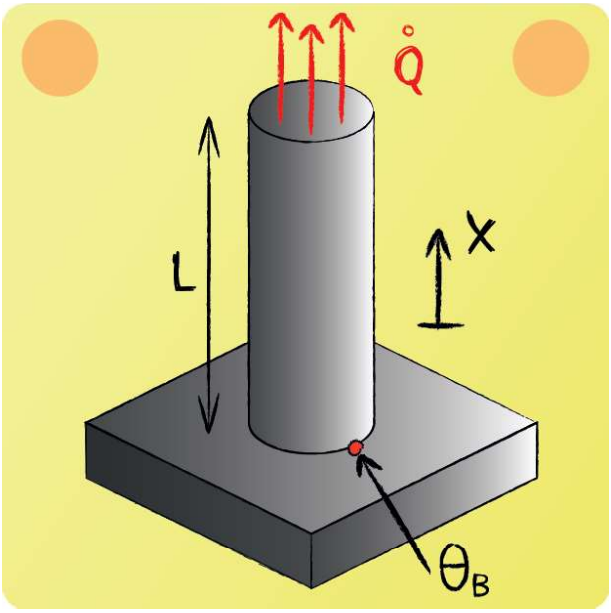
Conduction Fins 02



Choose the right boundary conditions for a fin with transferring heat at the fin head!

Temperature difference:

$$\theta(x) = T(x) - T_\mathrm{A}$$

Boundary conditions:

$$T(x=0) = T_\mathrm{B}$$

$$-\lambda \cdot A \cdot \left.\frac{dT}{dx}\right|_{x=L} = \alpha \cdot A \cdot (T(x=L) - T_\mathrm{A})$$

Combining the temperature difference and the boundary conditions results in:

$$\theta(x=0) = T_\mathrm{B} - T_\mathrm{A} = \theta_\mathrm{B}$$

$$-\lambda \cdot \left.\frac{d\theta}{dx}\right|_{x=L} = \alpha \cdot \theta(x=L)$$