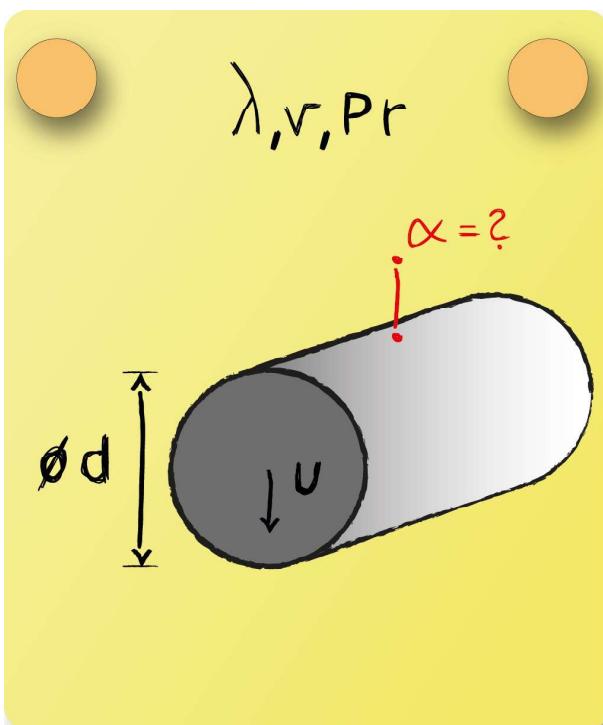


Heat Transfer Correlation 5.1



A cylinder falls through a non-moving fluid. Calculate the mean heat transfer coefficient $\bar{\alpha}$.

Reynolds number:

$$\text{Re}_d = \frac{u \cdot d}{\nu} = 6.67 \cdot 10^4$$



Nusselt number:

$$\text{Nu}_d = 0.0266 \cdot \text{Re}_d^{0.805} \cdot \text{Pr}^{0.4} = 177.27$$

Heat transfer coefficient:

$$\bar{\alpha} = \frac{\text{Nu}_d \cdot \lambda_f}{d} = 23.05 \text{ W/m}^2\text{K}$$