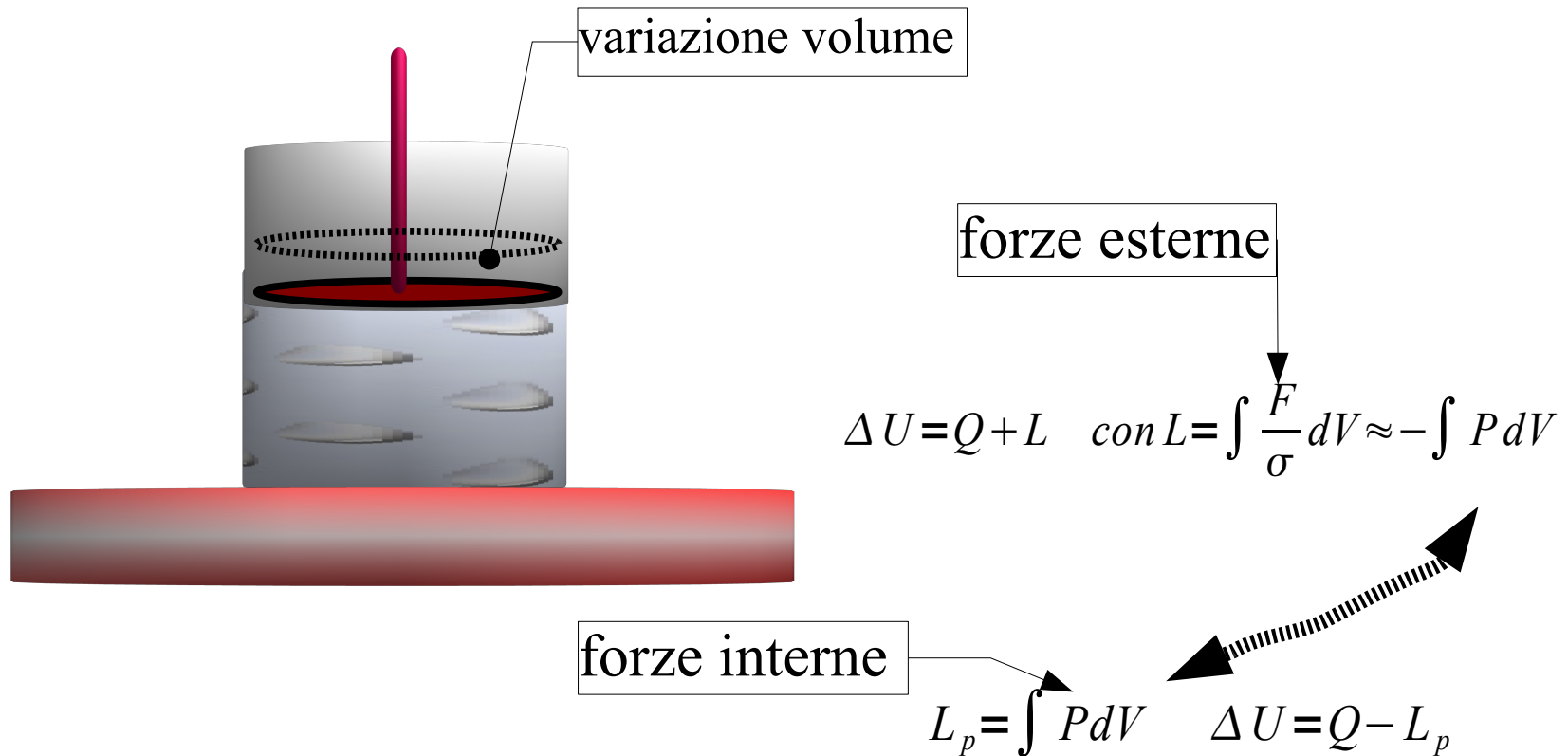
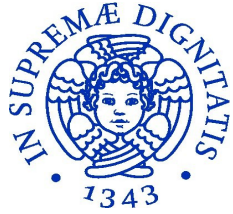


Termodinamica

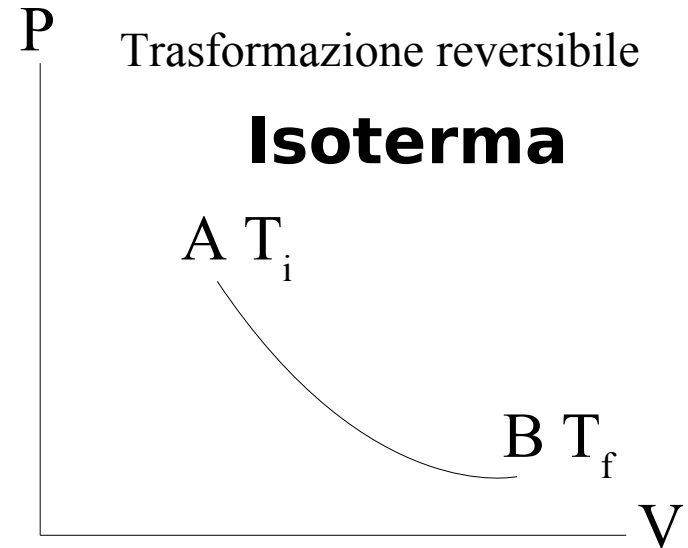
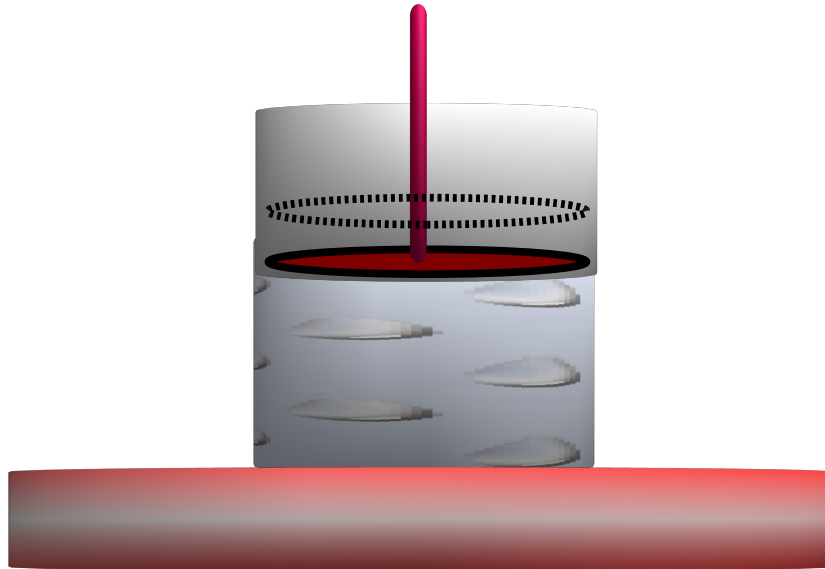
Trasformazione e lavoro





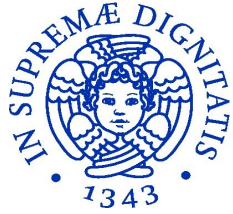
Termodinamica

lavoro



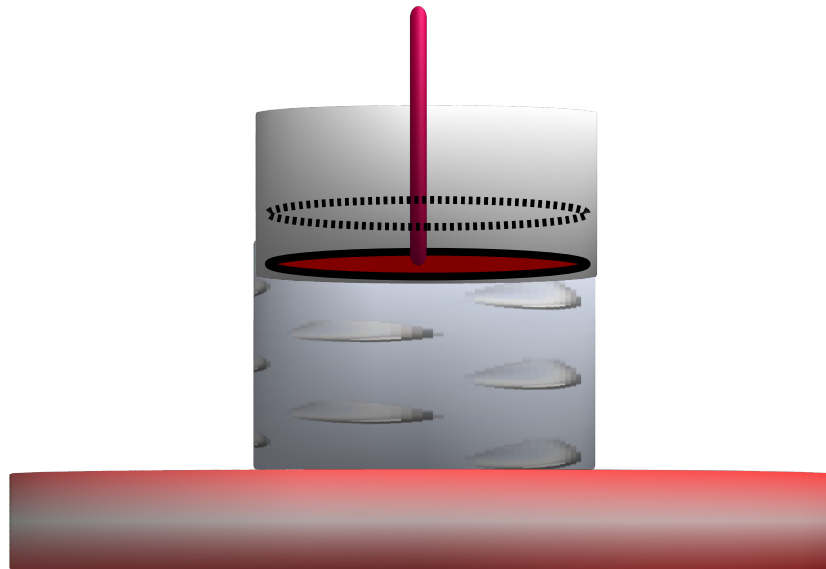
$$L = -n R T_0 \ln \frac{V_f}{V_i}$$

$$Q = -L = n R T_0 \ln \frac{V_f}{V_i}$$

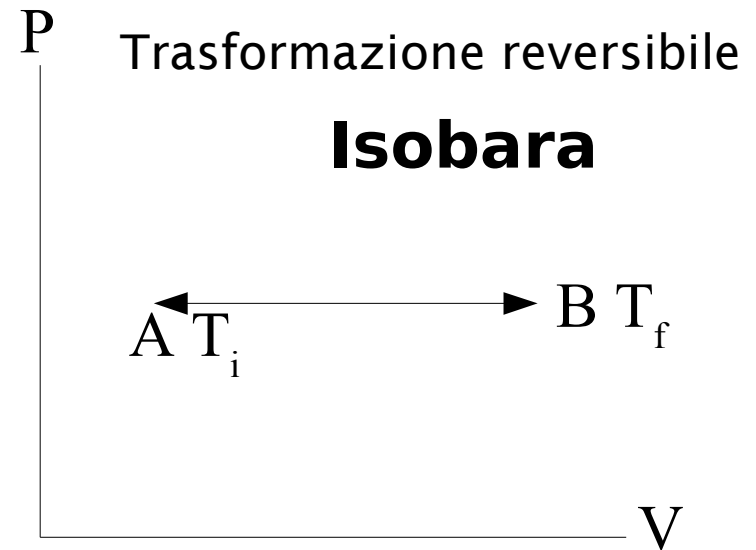


Termodinamica

lavoro

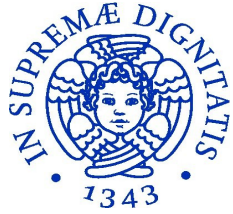


$$L = -P \Delta V = -P(V_f - V_i)$$



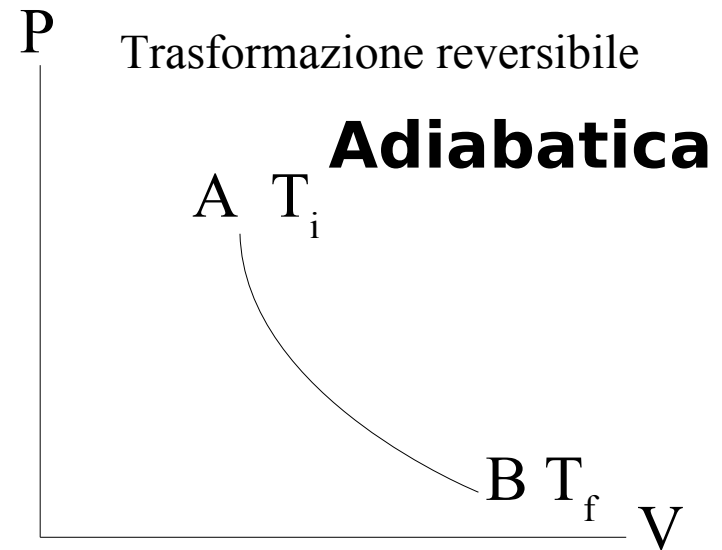
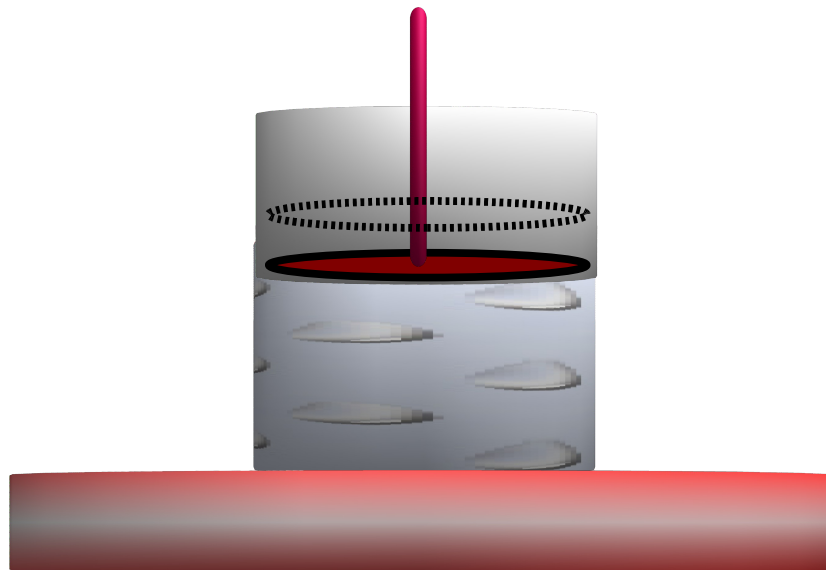
$$L = -P \Delta V = -n R(T_f - T_i)$$

$$Q = n c_p (T_f - T_i) = n (c_v + R)(T_f - T_i)$$



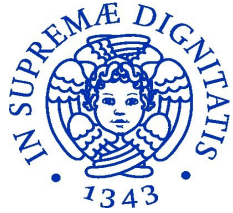
Termodinamica

lavoro



$$\Delta U = L \implies$$

$$L = n c_v (T_f - T_i)$$



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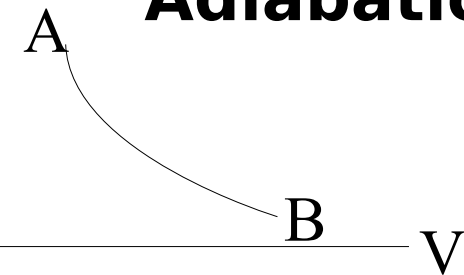
Forma dell'adiabatica



$$n c_v \Delta T = -P dV$$

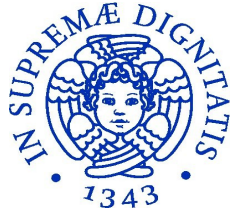
Trasformazione reversibile

Adiabatica



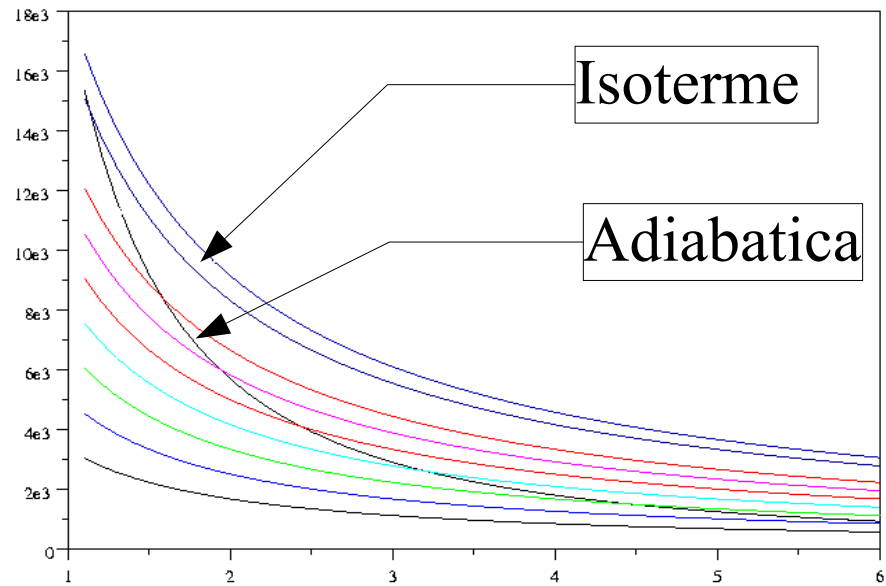
$$n c_v \frac{dT}{dV} = -P = -\frac{nRT}{V} \quad \text{dacui}$$
$$\frac{dT}{T} = -\frac{R}{c_v} \frac{dV}{V} \quad \text{ed integrando}$$
$$\int \frac{dT}{T} = -\frac{R}{c_v} \int \frac{dV}{V} + \text{cost.} \quad \text{ovvero con } \frac{R}{C_v} = \gamma - 1$$
$$\log T + (\gamma - 1) \log V + \text{cost.}$$
$$e^{\log T + (\gamma - 1) \log V} = e^{\text{cost.}}$$
$$TV^{\gamma - 1} = C$$

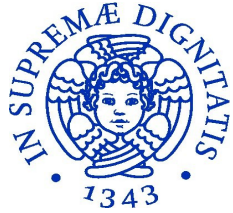
$$TV^{\gamma - 1} = T_0 V_0^{\gamma - 1}$$
$$PV^\gamma = \text{costante} = P_0 V_0^\gamma$$



Termodinamica

Forma dell'adiabatica





Termodinamica

Sommario formule



$$PV = P_0 V_0 = \text{Cost.}$$

$$L = -nR \Pi \log \frac{V_f}{V_i} \quad Q = -L = nR \Pi \log \frac{V_f}{V_i} \quad \Delta U = 0$$

Isoterme

$$\frac{V}{T} = \frac{V_0}{T_0} = \text{Cost.} \quad L = -P(V_f - V_i) = -nR(T_f - T_i)$$

$$Q = n c_p (T_f - T_i) \quad \Delta U = n c_v (T_f - T_i)$$

Isobare

$$TV^{\gamma-1} = T_0 V_0^{\gamma-1} = \text{Cost.} \quad PV^{\gamma} = P_0 V_0^{\gamma} = \text{Cost.}$$

$$L = n c_v (T_f - T_i) \quad Q = 0 \quad \Delta U = n c_v (T_f - T_i)$$

Adiabatiche