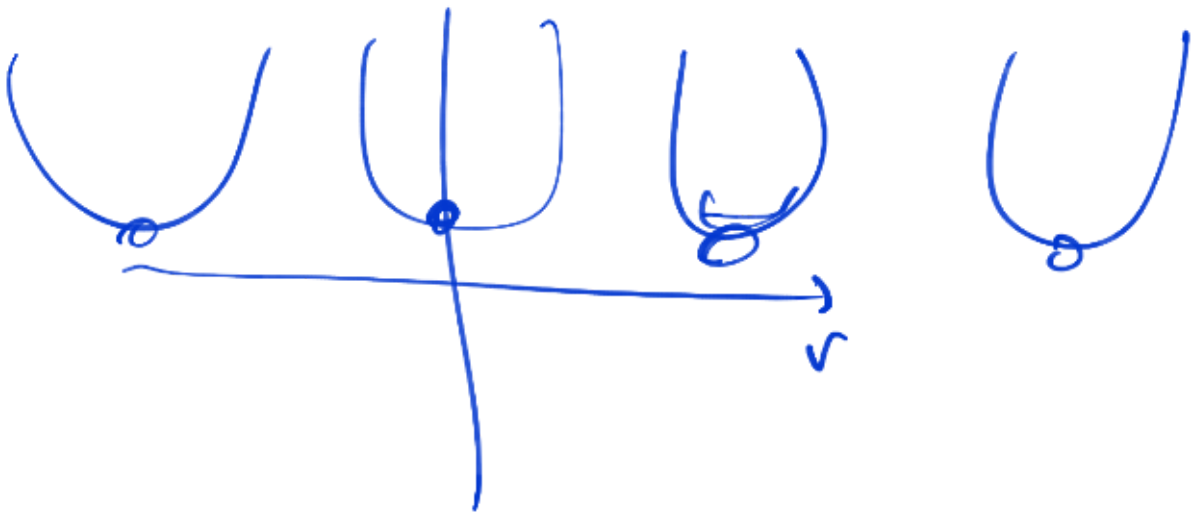
Sólidos

$$C_V \simeq 25 \uparrow \frac{J}{mol\,K}$$

$$R = 8{,}314 \frac{J}{mol\,K}$$

$$C_V \simeq 3R$$

$V(r)$



$$U_i = \frac{1}{2} m v^2 + \frac{1}{2} k \Delta r^2$$

$$U_i = \frac{1}{2} m \left(v_{x_i}^2 + v_{y_i}^2 + v_{z_i}^2\right) + \frac{1}{2} k_{ef} \left(\Delta x_i^2 + \Delta y_i^2 + \Delta z_i^2\right)$$

$$U = \sum_{i=1}^{N} U_i = \sum_{i=1}^{N} \frac{1}{2} m v_i^2 + \frac{1}{2} k_{ef} \Delta r_i^2$$

$z = 6$

$U = z\left(\frac{1}{2} k T\right)$

$U = 3\, kT \cdot N$

$U = 3\, N\, kT \quad \frac{N_A}{N_A}$

$U = 3\, n\, RT$

$\Delta U = 3\, n\, R\, \Delta T$ —

$Q = C_V \cdot n\, \Delta T$ —

$\boxed{C_V = 3R}$

$C_V^{Pb} = 3R$ Loi de Cv

$C_V^{Cu.} = 3R$

1 mol de Pb
de 273K à 373K

$Q = C_V \, n \, \Delta T$

$= 3.8{,}314 \, \frac{J}{\cancel{mol}\,K} \cdot 1\,\cancel{mol} \cdot 100K$

$= 7482{,}6 \, J$

$\approx 7{,}5 \, kJ$

1 kg de Cu.

$C_V = 3R$

$Q = C \, n \, \Delta T$

$= C \frac{m}{M} \Delta T$

$Q = \left(\frac{C}{M}\right) m \, \Delta T$

$$c = \frac{C}{M} = \frac{3R}{M} = c$$

$$Q_w = \frac{3.8314\ J/mol\,K}{635\ g/mol} \cdot 1000\,g \cdot 10K$$

$$Q_w = 39{,}3\ kJ$$

Sistema interactúa → Energía (Q, W) / materia

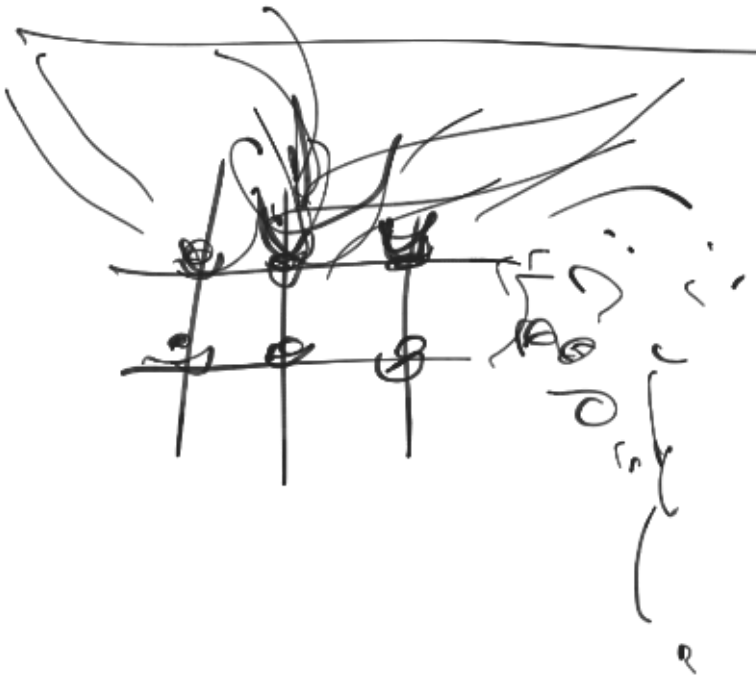
Sistema

frontera

Medio

Sistema

Aislado.



$$Q = L\,\mu$$

$$= L\,n$$

$$L = Q/\mu \qquad L = Q/\mu$$