ONDORIO FISIKOAK : LABURBILDUMA OROKORRA

- $\left(\frac{\partial^2 u}{\partial s^2}\right) = \frac{\partial}{\partial s}\left(\frac{\partial u}{\partial s}\right)_v = \left(\frac{\partial T}{\partial s}\right)_v = \frac{1}{\left(\frac{\partial s}{\partial T}\right)_v} = \frac{1}{\frac{T}{T}\left(\frac{\partial s}{\partial T}\right)_v} = \frac{T}{C_v} \Rightarrow \boxed{C_v \geq 0}$

- $\left(\frac{\partial^2 u}{\partial v^2}\right) = \frac{\partial}{\partial v}\left(\frac{\partial u}{\partial v}\right) = -\left(\frac{\partial p}{\partial v}\right)_s = -\frac{\left(\frac{\partial s}{\partial v}\right)_p}{\left(\frac{\partial s}{\partial p}\right)_v} = \frac{\left(\frac{\partial s}{\partial T}\right)_p \left(\frac{\partial T}{\partial v}\right)_p}{\left(\frac{\partial s}{\partial T}\right)_v \left(\frac{\partial T}{\partial p}\right)_v} = \frac{C_p}{C_v} \frac{1}{V K_T} \Rightarrow \boxed{K_T \geq 0}$

- $F_{TT} \longrightarrow C_v \geq 0$
- $F_{VV} \longrightarrow K_T \geq 0$

- $H_{SS} \longrightarrow C_p \geq 0$
- $H_{pp} \longrightarrow C_v K_T \geq 0$

- $G_{TT} \longrightarrow C_p \geq 0$
- $G_{pp} \longrightarrow K_T \geq 0$

$$C_p - C_v = T V \frac{\alpha^2}{K_T}$$

$$K_S \equiv -\frac{1}{V}\left(\frac{\partial V}{\partial p}\right)_s \qquad K_S \geq 0$$

$$C_p \geq C_v \geq 0$$
$$K_T \geq K_S \geq 0$$

SISTEMA EGONKORREAN

SISTEMA HIDROSTATIKOAN

BESTE EDOZEIN SISTEMATAN ANTZEKO DESBERDINTZAK, HOTS EZAUGARRIEKIN LOTURIKO BERO-AHALMENEN GAINEKOAK