(C3) Soit la compliance $C = f^T u = u^T \underline{\underline{K}}\, u = u^T K u$

T.F.I

$$\frac{dC}{dx} = 2 u^T K \frac{du}{dx} + u^T \frac{dK}{dx} u \qquad [1] \quad \text{(Chain rule)}$$

mais en structure $Ku = f$ (f ne dépend pas de x)

$$\frac{dK}{dx} u + K \frac{du}{dx} = \frac{df}{dx} = 0 \text{ ici} \qquad \text{(T.F.I.)}$$

$$\boxed{K \frac{du}{dx} = \boxed{-} \frac{dK}{dx} u} \longrightarrow \text{dans [1], il vient}$$

$$-2 u^T \frac{dK}{dx} u + u^T \frac{dK}{dx} u = - u^T \frac{dK}{dx} u$$

$$\boxed{\frac{dC}{dx} = - u^T \frac{dK}{dx} u} \qquad \text{simple ?}$$