$|d| = 1$ and $a_i = T_{ij} b_j$ №1

$\cancel{a_{nm} a'_n}$

$L_{nm} a'_n (L_{nk} b_k + \delta_{km} T_{nk} b_k - \delta_{nk} b'_k) =$

$= L_{nm} a'_n (L_{nk} b_k + T_{nm} b_m - b'_n) =$

$= L_{nm} a'_n (L_{nk} b_k + a_n - b'_n) =$

$= L_{nm} a'_n (b'_n + a_n - b'_n) = L_{nm} a'_n (a_n) =$

$\cancel{= L_{nm} L_{nm} a_m a_n}$

$= L_{nm} L_{nm} a_m a_n =$

№2 $x_1 = \xi_1 + \beta(\xi_2^2 t^2 - \xi_3 t)$; $x_2 = \xi_3 + k\xi_3 t$

$x_3 = \xi_3$

$\dot{x}_1 = \cancel{2\beta} \beta(2\xi_2^2 t - \xi_3)$

$\dot{x}_2 = k\xi_3$

$\dot{x}_3 = 0$

$\ddot{x}_1 = 2\beta\xi_2^2$

$\ddot{x}_2 = 0$

$\ddot{x}_3 = 0$

at $t = \frac{1}{4}$ $(v_1, v_2, v_3) = (0; \frac{1}{k}; 0)$

$$\begin{cases} \dot{x}_1 = \beta(2\xi_2^2 \cdot \frac{1}{4} - \xi_3) = 0 \\ \dot{x}_2 = k\xi_3 = \frac{1}{k} \Rightarrow \xi_3 = \frac{1}{k^2} \end{cases}$$

$\dot{x}_1 = \beta(\frac{1}{2}\xi_2^2 - \frac{1}{k^2}) = 0$

$\frac{1}{2}\xi_2^2 = \frac{1}{k^2}$

$\xi_2^2 = \frac{2}{k^2}$

$\xi_2 = \pm\frac{\sqrt{2}}{k}$

$$\begin{cases} \ddot{x}_1 = 2\beta \cdot \frac{2}{k^2} = 4\frac{\beta}{k^2} \\ \ddot{x}_2 = 0 \\ \ddot{x}_3 = 0 \end{cases}$$

$$w_1 = k\xi_1^2 \; ; \; w_2 = \frac{1}{2}k\xi_1\xi_3^2 \; ; \; w_3 = k\xi_3(\xi_3+1)$$

$$\varepsilon_{ij} = \frac{1}{2}\left(\frac{\partial w_j}{\partial \xi_i} + \frac{\partial w_i}{\partial \xi_j}\right)$$

$$\varepsilon_{11} = \frac{1}{2}\left(2 \cdot 2k\xi_1\right) = 2k\xi_1$$

$$\varepsilon_{22} = \frac{1}{2}\left(2 \cdot 0\right) = 0.$$

$$\varepsilon_{33} = \frac{1}{2}\left(2 \cdot \left(k2 \cdot \varepsilon_3 + k\right)\right) = 2k\varepsilon_3 + k$$

$$\varepsilon_{12} = \frac{1}{2}\left(\cancel{2}\left(0 + \frac{1}{2}k\xi_3^2\right)\right) = \frac{1}{4}k\xi_3^2$$

$$\varepsilon_{13} = \frac{1}{2}\left(0 + 0\right) = 0$$

$$\varepsilon_{23} = \frac{1}{2}\left(\frac{1}{2}k\xi_1 2\xi_3 + 0\right) = \frac{1}{2}k\xi_1\xi_3$$

$$\varepsilon = \begin{pmatrix} 2k\varepsilon_1 & \frac{1}{4}k\varepsilon_3^2 & 0 \\ \frac{1}{4}k\varepsilon_3^2 & 0 & \frac{1}{2}k\varepsilon_1\varepsilon_3 \\ 0 & \frac{1}{2}k\varepsilon_1\varepsilon_3 & 2k\varepsilon_3+k \end{pmatrix}$$

$$\begin{cases} \dfrac{\Delta dV}{dV} = 1 + \varepsilon_{ii} = 5k \Rightarrow \\ \varepsilon_{11} = \cancel{2}k \Rightarrow \xi_1 = \frac{1}{2} \end{cases}$$

$$1 + 2k\xi_1 + 2k\varepsilon_3 + k = 5k$$

$$1 + 2k\frac{1}{2} + 2k\varepsilon_3 + k = 5k$$

$$1 + 2k\varepsilon_3 = 3k \Rightarrow 2k\varepsilon_3 = 3k-1$$

$$\varepsilon_3 = \frac{3k-1}{2k}$$

$2\varepsilon_{23}$ = degrease between x_2 and x_3

$$2 \cdot \frac{1}{2} \cdot k \cdot \frac{1}{2} \cdot \frac{(3k-1)}{2k} = \frac{1}{4}(3k-1) \approx -\frac{1}{4} \text{ if } k \text{ is small}$$

$$\bar{v} = k\left[x_1(\bar{e}_1 + \bar{e}_2) + x_2(\bar{e}_2 + 3\bar{e}_3) + 3x_3\bar{e}_3\right]$$

~~$\bar{v} = k[$~~

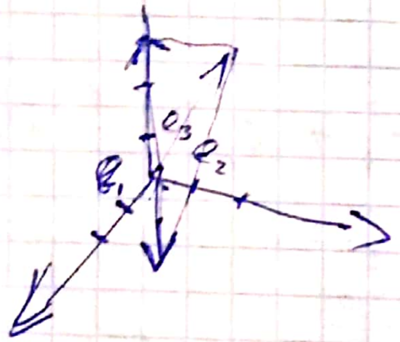
$$e_{ij} = \frac{1}{2}\left[\frac{\partial v_i}{\partial x_j} + \frac{\partial v_j}{\partial x_i}\right]$$

$$\bar{v} = k\left[x_1\bar{e}_1 + \bar{e}_2(x_1 + x_2) + \bar{e}_3(3x_2 + 3x_3)\right]$$

$e_{11} = \frac{1}{2}\cdot 2\cdot k = k > 0$ rate of elo. x_1

$e_{22} = \frac{1}{2}\cdot 2k = k > 0$ along x_2

$e_{33} = \frac{1}{2}\cdot 2\cdot k\cdot 3 = 3k > 0$ along x_3



~~If $e_{ii} < 0 \Rightarrow \exists$~~

e_{ii} allways increase $\Rightarrow$ There are no point such that any elongation decrease.