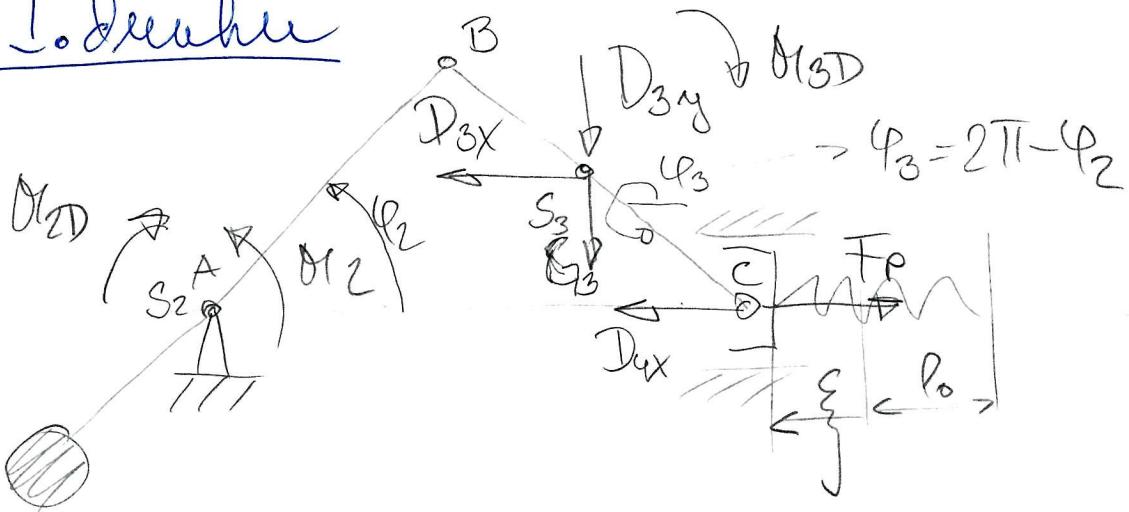


L.R. I. Deekha



$$\delta U^{FD} + \sum_i \lambda_i \delta f_i = 0$$

vezbovee rovnic

$$\begin{aligned}
 B: x_3 - \frac{3}{2}r \cos \varphi_2 &= 0 & \delta f_1 &= \delta x_3 + \frac{3}{2}r \sin \varphi_2 \delta \varphi_2 \\
 B: y_3 - \frac{r}{2} \sin \varphi_2 &= 0 & \delta f_2 &= \delta y_3 - \frac{r}{2} \cos \varphi_2 \delta \varphi_2 \\
 C: x_4 - 2r \cos \varphi_2 &= 0 & \delta f_3 &= \delta x_4 + 2r \sin \varphi_2 \delta \varphi_2 \\
 (\varphi_3 + \varphi_2 - 2\pi) &= 0 & \delta f_4 &= \delta \varphi_3 + \delta \varphi_2
 \end{aligned}$$

$$\xi = 2r - x_4, \quad \delta \xi = -\delta x_4$$

$$M_{2D} = T_{S2} \cdot \dot{\varphi}_2^{\infty}$$

$$D_{3x} = M_3 \cdot \dot{x}_3^{\infty}$$

$$D_{3y} = M_3 \cdot \dot{y}_3^{\infty}$$

$$M_{3D} = T_{S3} \cdot \dot{\varphi}_3^{\infty}$$

$$D_{4x} = M_4 \cdot \dot{x}_4^{\infty}$$

$$\begin{aligned}
 & (\theta_2 - \theta_{2D}) \ddot{\varphi}_2 - D_3 x \ddot{\varphi}_3 - (D_3 y + G_3) \ddot{y}_3 - \theta_{3D} \ddot{\varphi}_3 - \\
 & - D_4 x \ddot{x}_4 + k \ddot{x}_4 \cdot \ddot{\varphi}_4 + \lambda_1 \ddot{f}_1 + \lambda_2 \ddot{f}_2 + \lambda_3 \ddot{f}_3 + \lambda_4 \ddot{f}_4 = 0
 \end{aligned}$$

$$\begin{aligned}
 & (\theta_2 - I_{2S2} \ddot{\varphi}_2) \ddot{\varphi}_2 - \underline{m_3 \ddot{x}_3 \ddot{\varphi}_3} - \underline{(m_3 \ddot{y}_3 + G_3) \ddot{y}_3} - \\
 & - \underline{I_{3S3} \ddot{\varphi}_3} - \underline{m_4 \ddot{x}_4 \ddot{\varphi}_4} + \underline{k(2r - x_4) \ddot{x}_4} + \\
 & + \lambda_1 \left(\ddot{x}_3 + \frac{2}{2} \sin \varphi_2 \ddot{\varphi}_2 \right) + \lambda_2 \left(\ddot{y}_3 - \frac{r}{2} \cos \varphi_2 \ddot{\varphi}_2 \right) + \\
 & + \lambda_3 \left(\ddot{x}_4 + 2r \sin \varphi_2 \ddot{\varphi}_2 \right) + \lambda_4 \left(\ddot{\varphi}_3 + \ddot{\varphi}_2 \right) = 0
 \end{aligned}$$

$$\begin{bmatrix}
 I_{2S2} & m_3 & m_3 & I_{3S3} & m_4
 \end{bmatrix} \begin{bmatrix}
 \ddot{\varphi}_2 \\
 \ddot{x}_3 \\
 \ddot{y}_3 \\
 \ddot{\varphi}_3 \\
 \ddot{x}_4
 \end{bmatrix} = \begin{bmatrix}
 \frac{3}{2} r s \varphi_2 & -\frac{r}{2} c \varphi_2 & 2 r s \varphi_2 & 1 & 1 \\
 1 & 1 & 1 & 1 & 1 \\
 1 & 1 & 1 & 1 & 1
 \end{bmatrix} \begin{bmatrix}
 M \\
 \lambda_2 \\
 \lambda_3 \\
 \lambda_4
 \end{bmatrix} + \begin{bmatrix}
 \theta_2 \\
 0 \\
 -G_3 \\
 0 \\
 k(2r - x_4)
 \end{bmatrix}$$

$$\begin{aligned}
 & \ddot{\varphi}_2 \left[\theta_2 - I_{2S2} \ddot{\varphi}_2 + \lambda_1 \frac{3}{2} r s \varphi_2 - \lambda_2 \frac{r}{2} c \varphi_2 + \lambda_3 2 r s \varphi_2 + \lambda_4 \cdot 1 \right] + \\
 & \ddot{x}_3 \left[-m_3 \ddot{x}_3 + M \right] + \ddot{y}_3 \left[-(m_3 \ddot{y}_3) - G_3 + \lambda_2 \right] + \\
 & \ddot{\varphi}_3 \left[-I_{3S3} \ddot{\varphi}_3 + \lambda_4 \right] + \\
 & \ddot{x}_4 \left[-m_4 \ddot{x}_4 + k(2r - x_4) + \lambda_3 \right] = 0
 \end{aligned}$$