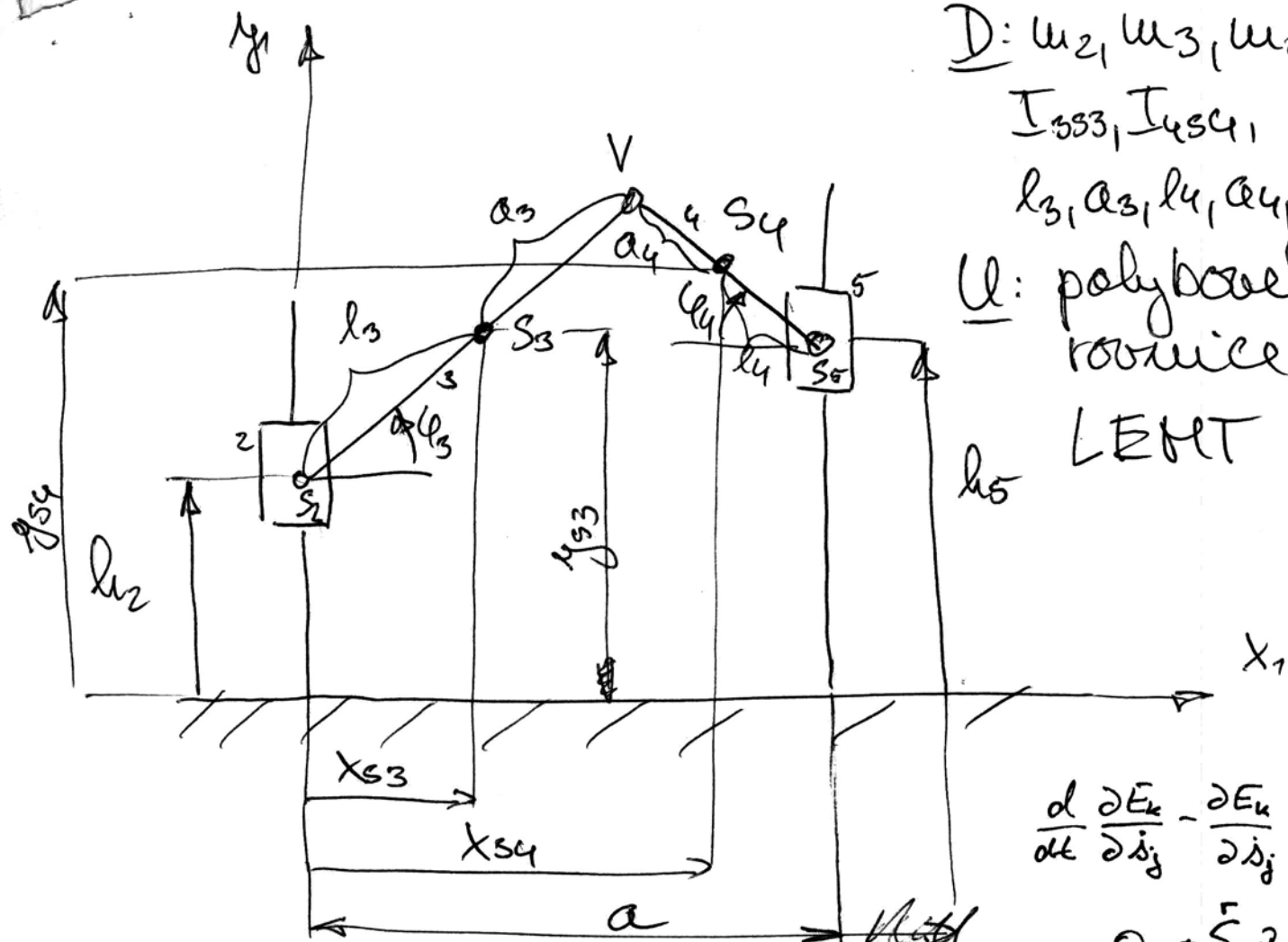




$D: m_2, m_3, m_4, m_5,$
 $I_{333}, I_{444},$
 l_3, a_3, l_4, a_4, a
 $U: \text{polybase rovine}$
 $LEHT$

$$S = [\underbrace{h_2, x_{S3}, y_{S3}, \phi_3}_L, \underbrace{x_{S4}, y_{S4}, \phi_4, h_5}_R]$$

$$\frac{d}{dt} \frac{\partial E_k}{\partial \dot{s}_j} - \frac{\partial E_k}{\partial s_j} = Q_j + \sum_{k=1}^r \alpha_k \frac{\partial f_k}{\partial s_j}$$

$$u = 3(5-1) - 3_{\text{rot}} \cdot 2 - 2_{\text{pos}} \cdot 2 = 2^{\circ} \text{ vol}$$

$$S = 8$$

$f \Rightarrow$ počet vazb. podminimel $r=6$

$$E_k = \frac{1}{2} m_2 \cdot \dot{h}_2^2 + \frac{1}{2} m_3 \cdot (\dot{x}_{S3}^2 + \dot{y}_{S3}^2) + \frac{1}{2} I_{333} \cdot \dot{\phi}_3^2 + \frac{1}{2} m_5 \cdot \dot{h}_5^2 + \frac{1}{2} m_4 \cdot (\dot{x}_{S4}^2 + \dot{y}_{S4}^2) + \frac{1}{2} I_{444} \cdot \dot{\phi}_4^2$$

$$\frac{d}{dt} \left(\frac{\partial E_k}{\partial \dot{s}_j} \right) - \frac{\partial E_k}{\partial s_j} = Q_j + \sum_{k=1}^N \lambda_k \frac{\partial f_k}{\partial s_j} \quad \boxed{\text{Lagrange}}$$

$$s = [h_2, x_{s3}, y_{s3}, \varphi_3, x_{s4}, y_{s4}, h_4, h_5]^T$$

h_2

$$\frac{\partial E_k}{\partial \dot{h}_2} = u_2 \cdot \dot{h}_2 \quad \left| \frac{d}{dt}() = u_2 \cdot \ddot{h}_2 \right| \frac{\partial E_k}{\partial x_{s3}} = 0$$

$$\frac{\partial E_k}{\partial h_2} = 0$$

x_{s3}

$$\frac{\partial E_k}{\partial \dot{x}_{s3}} = u_3 \cdot \dot{x}_{s3} \quad \left| \frac{d}{dt}() = u_3 \cdot \ddot{x}_{s3} \right| \frac{\partial E_k}{\partial x_{s3}} = 0$$

y_{s3}

$$\frac{\partial E_k}{\partial \dot{y}_{s3}} = u_3 \cdot \dot{y}_{s3} \quad \left| \frac{d}{dt}() = u_3 \cdot \ddot{y}_{s3} \right| \frac{\partial E_k}{\partial y_{s3}} = 0$$

φ_3

$$\frac{\partial E_k}{\partial \dot{\varphi}_3} = I_{s33} \cdot \dot{\varphi}_3 \quad \left| \frac{d}{dt}() = I_{s33} \cdot \ddot{\varphi}_3 \right| \frac{\partial E_k}{\partial \varphi_3} = 0$$

$$\boxed{x_4} \quad \frac{\partial E_L}{\partial x_4^0} = w_4 \cdot \dot{x}_4^0 \bigg| \frac{d}{dt} () = w_4 \cdot \ddot{x}_4^0 \bigg| \frac{\partial E_L}{\partial x_4^0} = 0$$

$$\boxed{y_4} \quad \frac{\partial E_L}{\partial y_4^0} = w_4 \cdot \dot{y}_4^0 \bigg| \frac{d}{dt} () = w_4 \cdot \ddot{y}_4^0 \bigg| \frac{\partial E_L}{\partial y_4^0} = 0$$

$$\boxed{\varphi_4} \quad \frac{\partial E_L}{\partial \dot{\varphi}_4^0} = I_{\text{use}} \cdot \dot{\varphi}_4^0 \bigg| \frac{d}{dt} () = I_{\text{use}} \cdot \ddot{\varphi}_4^0 \bigg| \frac{\partial E_L}{\partial \dot{\varphi}_4^0} = 0$$

$$\boxed{h_5} \quad \frac{\partial E_L}{\partial h_5^0} = w_5 \cdot \dot{h}_5^0 \bigg| \frac{d}{dt} () = w_5 \cdot \ddot{h}_5^0 \bigg| \frac{\partial E_L}{\partial h_5^0} = 0$$

Vozbore' podmu'ly:

$$S_2: \quad x: 0 = x_{s3} - l_3 \cdot \cos \varphi_3 \quad \boxed{f_1}$$

$$y: h_2 = y_{s3} - l_3 \cdot \sin \varphi_3 \quad \boxed{f_2}$$

$$V: \quad x: x_{s3} + a_3 \cdot \cos \varphi_3 = x_{s4} - a_4 \cdot \cos \varphi_4 \quad \boxed{f_3}$$

$$y: y_{s3} + a_3 \cdot \sin \varphi_3 = y_{s4} + a_4 \cdot \sin \varphi_4 \quad \boxed{f_4}$$

$$S_5: \quad x: a = x_{s4} + l_4 \cdot \cos \varphi_4 \quad \boxed{f_5}$$

$$y: h_5 = y_{s4} - l_4 \cdot \sin \varphi_4 \quad \boxed{f_6}$$

Prepe'sene:

$$f_1 = x_{s3} - l_3 \cos \varphi_3 = 0$$

$$f_2 = y_{s3} - l_3 \sin \varphi_3 - h_2 = 0$$

$$f_3 = x_{s4} - a_4 \cos \varphi_4 - x_{s3} - a_3 \cos \varphi_3 = 0$$

$$f_4 = y_{s4} + a_4 \sin \varphi_4 - y_{s3} - a_3 \sin \varphi_3 = 0$$

$$f_5 = x_{s4} + l_4 \cos \varphi_4 - a = 0$$

$$f_6 = y_{s4} - l_4 \sin \varphi_4 - h_5 = 0$$

	h_2	x_{33}	y_{33}	φ_3	x_{34}	y_{34}	φ_4	h_5
f_1	$\emptyset$	1	$\emptyset$	$l_3 \sin \varphi_3$	$\emptyset$	$\emptyset$	$\emptyset$	$\emptyset$
f_2	-1	$\emptyset$	1	$-l_3 \cos \varphi_3$	$\emptyset$	$\emptyset$	$\emptyset$	$\emptyset$
f_3	$\emptyset$	-1	$\emptyset$	$l_3 \sin \varphi_3$	1	$\emptyset$	$l_4 \sin \varphi_4$	$\emptyset$
f_4	$\emptyset$	$\emptyset$	-1	$-l_3 \cos \varphi_3$	$\emptyset$	1	$l_4 \cos \varphi_4$	$\emptyset$
f_5	$\emptyset$	$\emptyset$	$\emptyset$	$\emptyset$	1	$\emptyset$	$-l_4 \sin \varphi_4$	$\emptyset$
f_6	$\emptyset$	$\emptyset$	$\emptyset$	$\emptyset$	$\emptyset$	1	$l_4 \cos \varphi_4$	-1

Zobecnění sedy:

$$\sum Q_j = -G_2 \cdot \mathcal{H}_2 - G_3 \cdot \mathcal{H}_{33} - G_4 \cdot \mathcal{H}_{34} - G_5 \cdot \mathcal{H}_5$$

Polybové rovnice

$$u_2 \cdot h_2^{\circ\circ} = -G_2 - \lambda_2$$

$$u_3 \cdot x_{33}^{\circ\circ} = \lambda_1 - \lambda_3$$

$$u_3 \cdot y_{33}^{\circ\circ} = -G_3 + \lambda_2 - \lambda_4$$

$$T_{333} \cdot \ell_3^{\circ\circ} = \lambda_1 l_3 \sin \ell_3 - \lambda_2 l_3 \cos \ell_3 + \lambda_3 a_3 \sin \ell_3 - \lambda_4 a_3 \cos \ell_3$$

$$u_4 \cdot x_{34}^{\circ\circ} = \lambda_3 + \lambda_5$$

$$u_4 \cdot y_{34}^{\circ\circ} = -G_4 + \lambda_4 + \lambda_6$$

$$T_{434} \cdot \ell_4^{\circ\circ} = \lambda_3 a_3 \sin \ell_4 + \lambda_4 a_4 \cos \ell_4 - \lambda_5 l_4 \sin \ell_4 - \lambda_6 l_4 \cos \ell_4$$

$$u_5 \cdot h_5^{\circ\circ} = -G_5 - \lambda_6$$