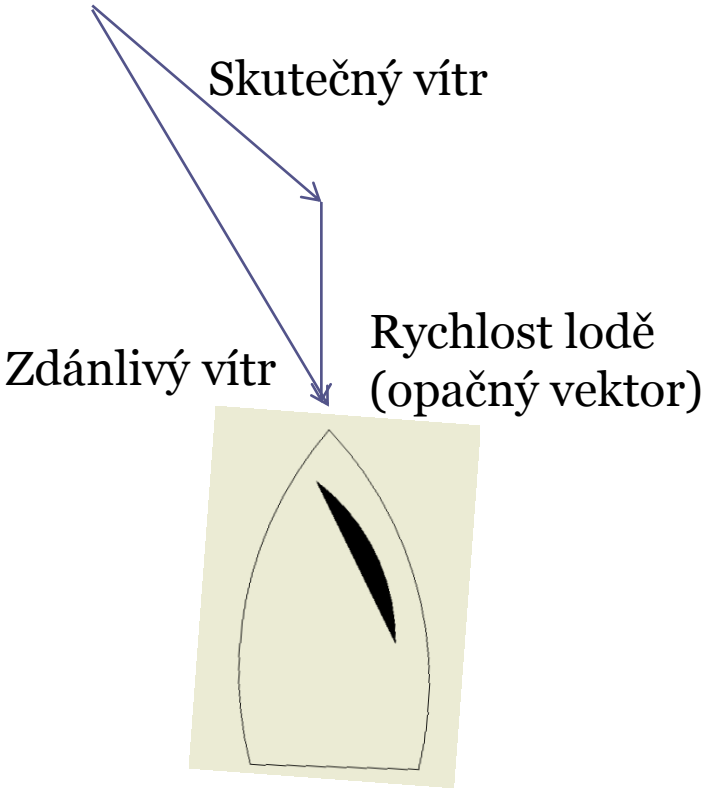
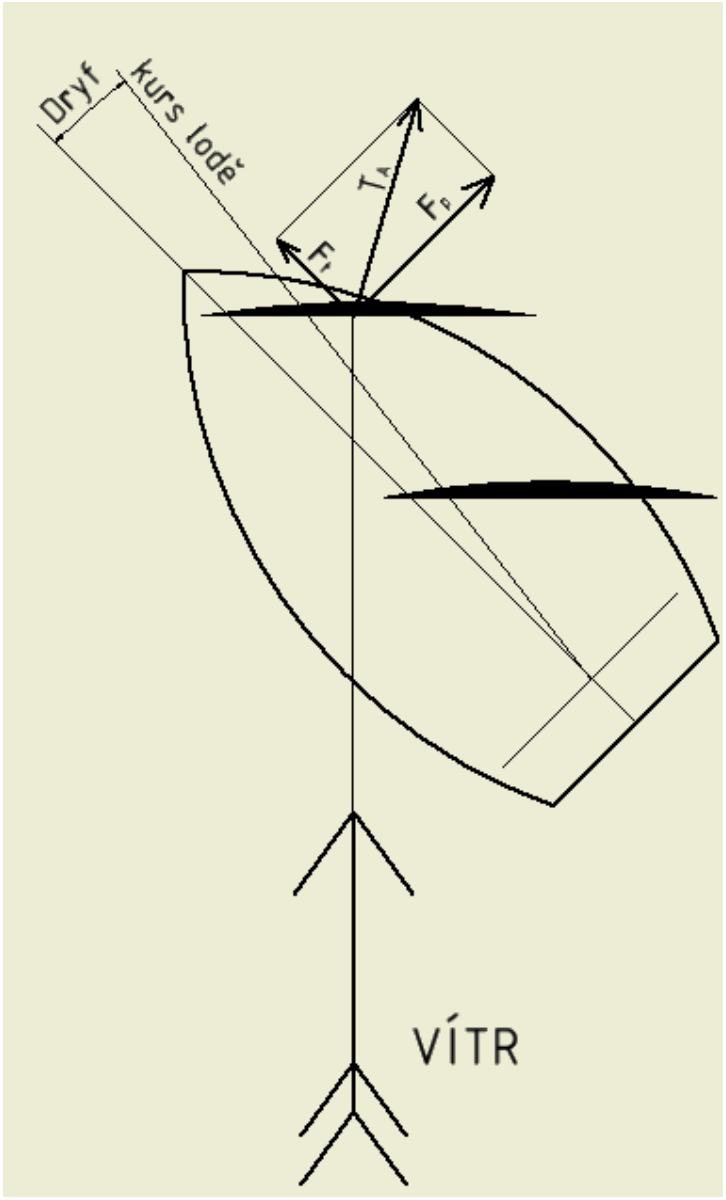
Nelineární řízení plachetnice

Působící síly:

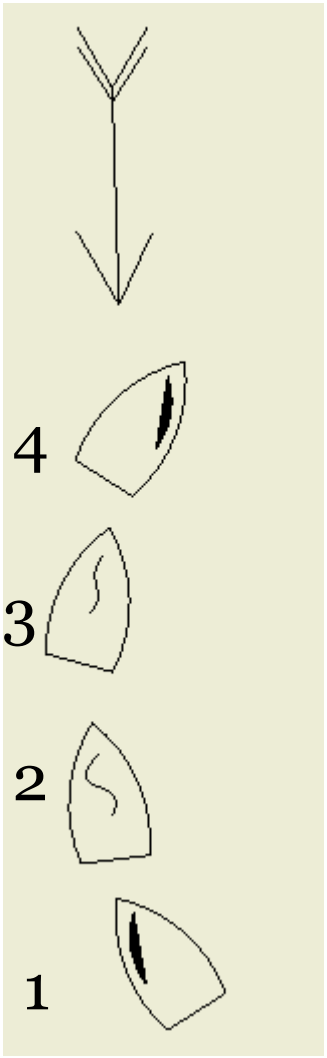
- aerodynamické
- hydrodynamické



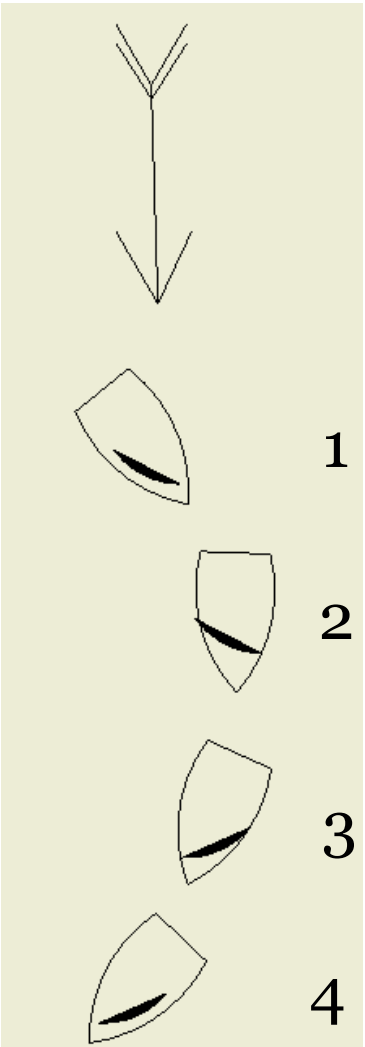


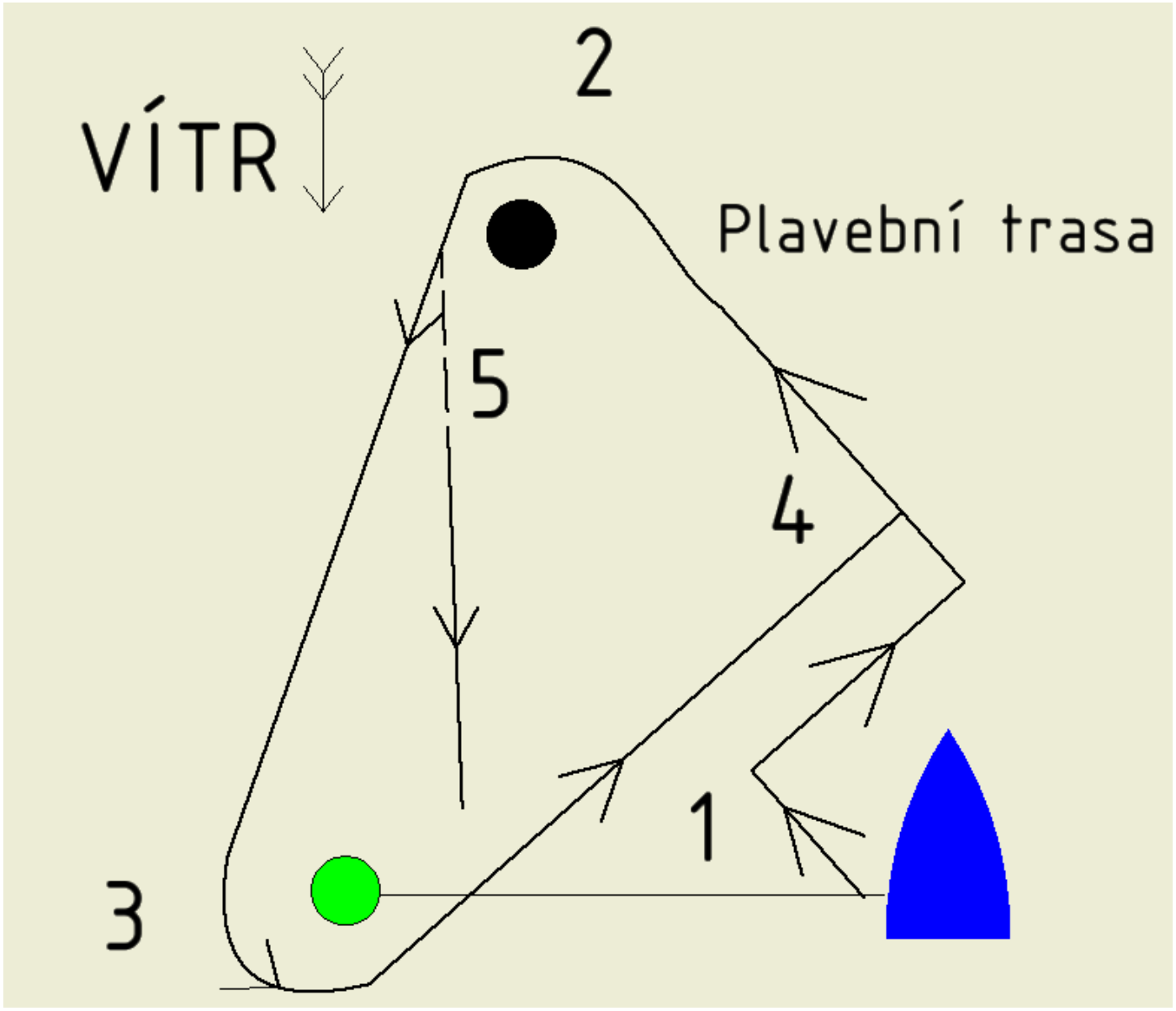
OBRATY

RE:

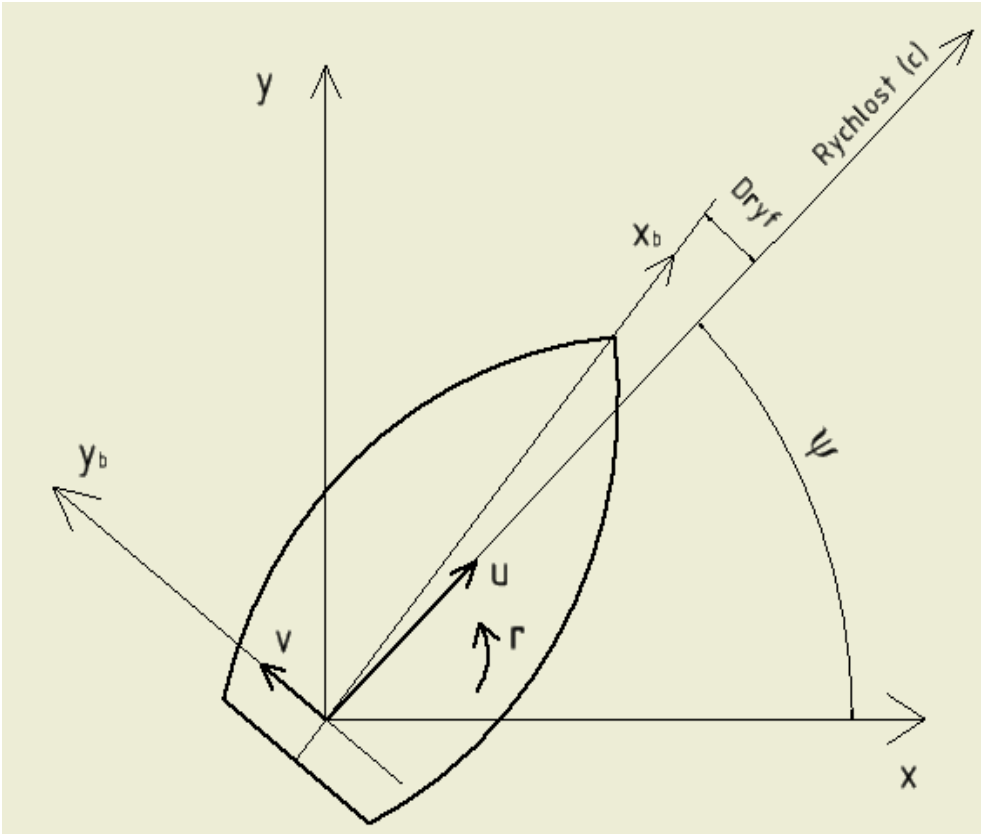


HALSA:




VÍTR
2
Plavební trasa
5
4
1
3

SIMULACE NELINEÁRNÍHO ŘÍZENÍ PLACHETNICE



Kinematika lodi

$$\begin{bmatrix}\dot{x}\\ \dot{y}\\ \dot{\psi}\end{bmatrix} = \begin{bmatrix}\cos\psi & -\sin\psi & 0\\ \sin\psi & \cos\psi & 0\\ 0 & 0 & 1\end{bmatrix} \times \begin{bmatrix}u\\ v\\ r\end{bmatrix}$$

Po substituci kdy

$$u = u_1 \qquad u_1 = \cos\left(\frac{\pi * t}{\varepsilon}\right)$$

$$r = u_2 \qquad u_2 = \sin\left(\frac{\pi * t}{\varepsilon}\right)$$

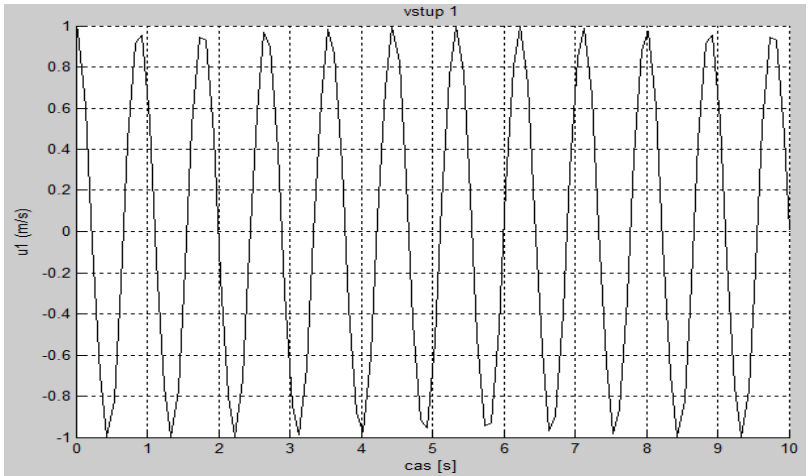
$$v = 0$$

$$\dot{x} = \cos\psi \cdot \cos\frac{\pi * t}{\varepsilon}$$

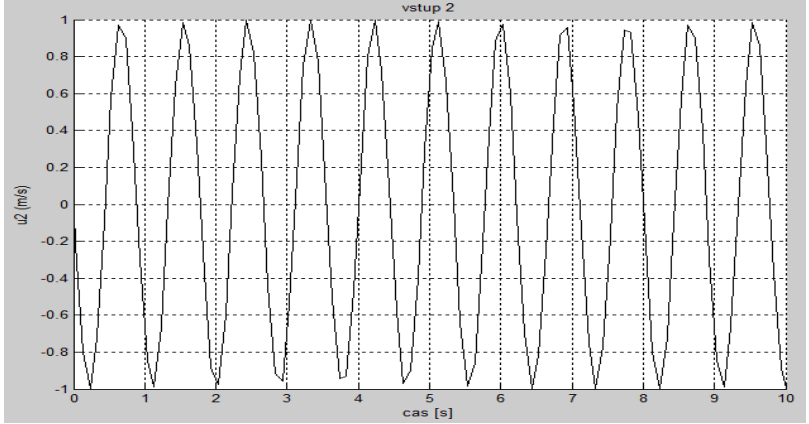
$$\dot{y} = \sin\psi \cdot \cos\frac{\pi * t}{\varepsilon}$$

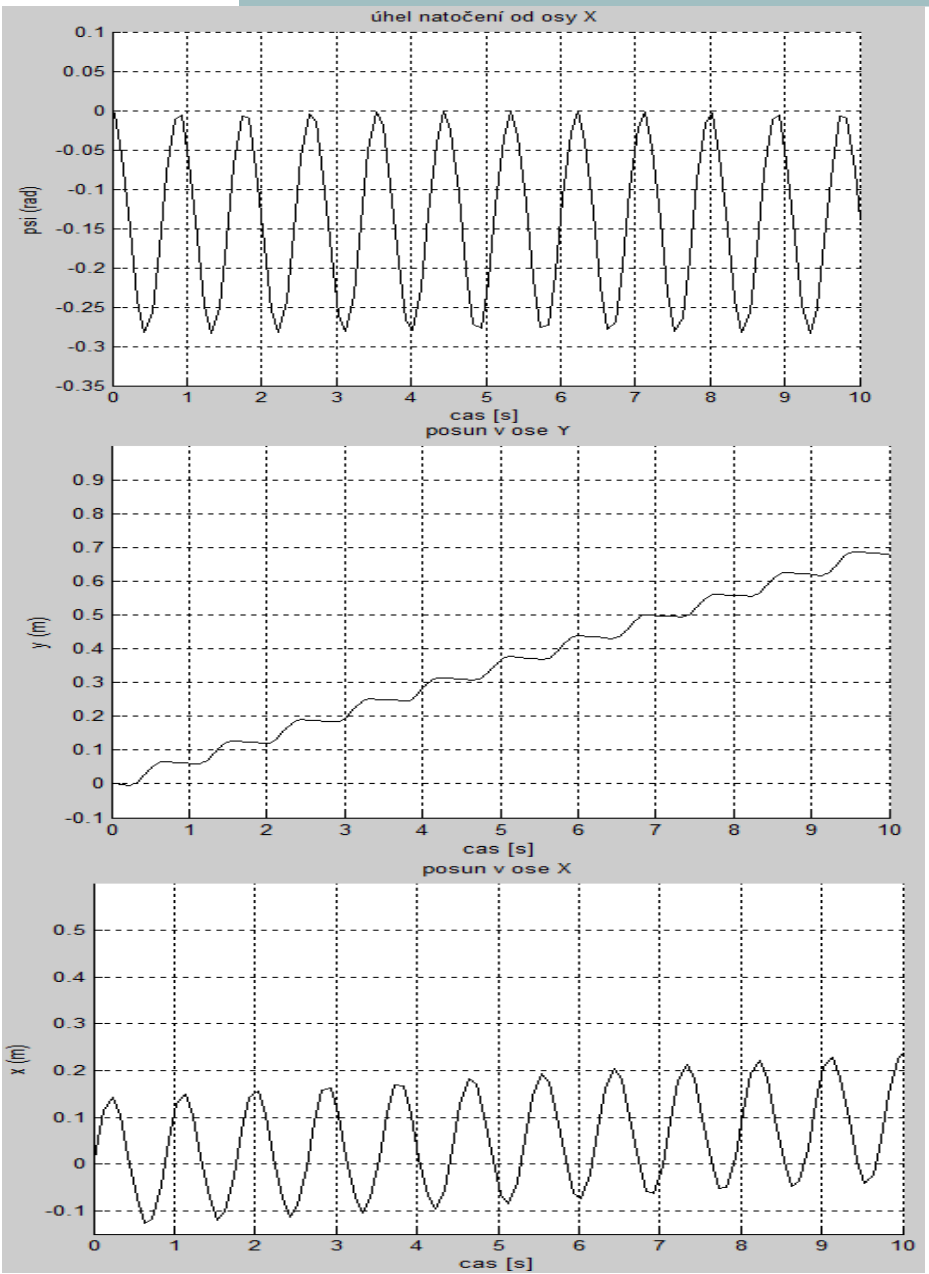
$$\dot{\psi} = \sin\frac{\pi * t}{\varepsilon}$$

1



2





3

4

5