

$$\frac{\Delta \vec{\tau}}{\Delta \Delta} = -\vec{\rho} \frac{\Delta \varphi}{\Delta \Delta} \quad \frac{d\varphi}{d\Delta} = \omega$$

$$\lim_{\Delta \Delta \rightarrow 0} \frac{\Delta \vec{\tau}}{\Delta \Delta} = \frac{d\vec{\tau}}{d\Delta} = -\vec{\rho} \omega = -\vec{\rho} \frac{v}{r}$$

$$\vec{a} = \frac{dv}{d\Delta} \vec{\tau} - \frac{v^2}{r} \vec{\rho}$$

$$\frac{dv}{d\Delta} \vec{\tau} = \vec{a}_{||} = \text{tangenciálne zrýchlenie}$$

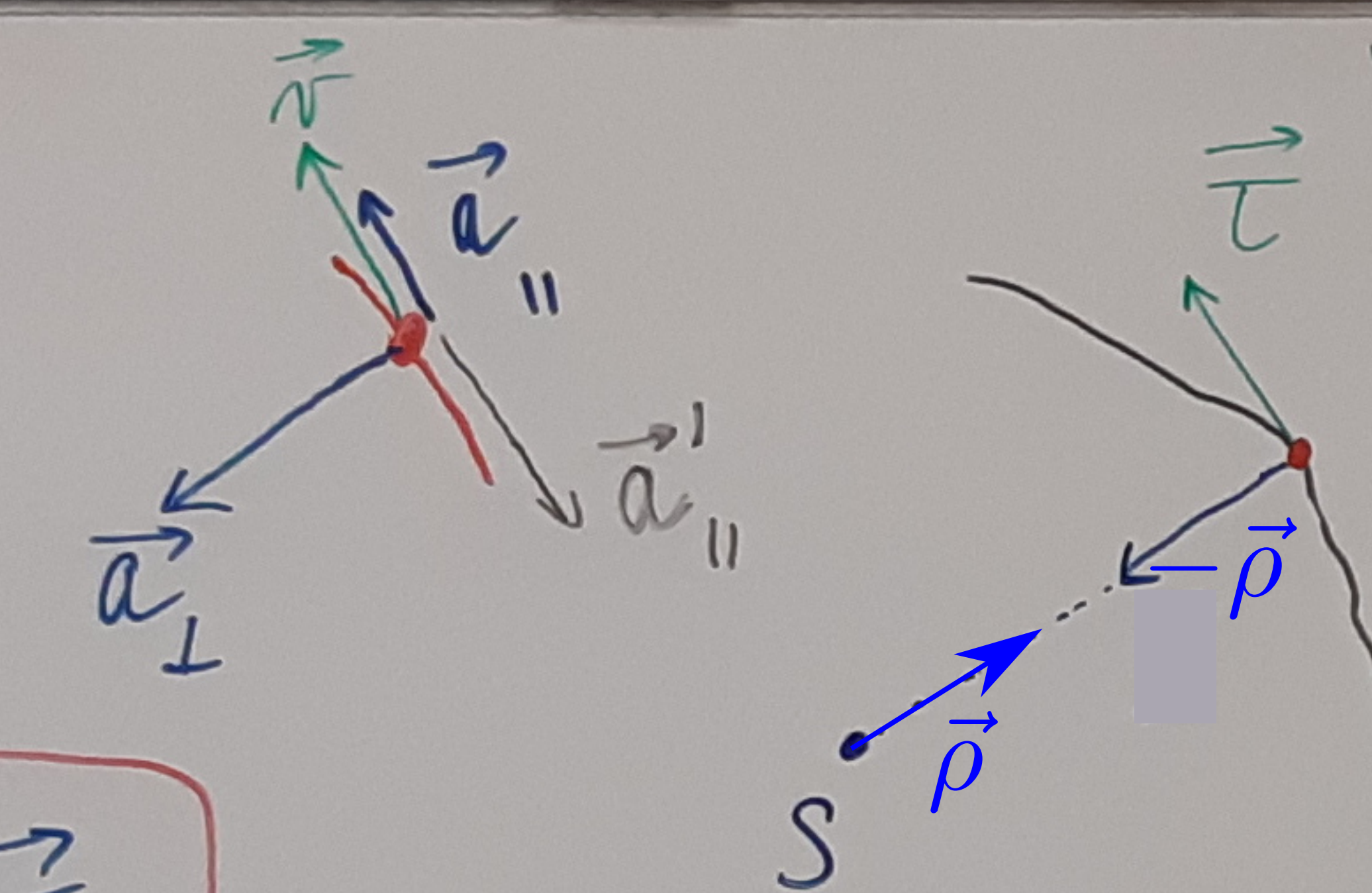
$$-\frac{v^2}{r} \vec{\rho} = \vec{a}_{\perp} = \text{normálové zrýchlenie}$$

$$\begin{aligned} \vec{a}_{\perp} &\perp \vec{v} \\ \vec{a}_{||} &\parallel \vec{v} \end{aligned}$$

$$\vec{a} = \vec{a}_{||} + \vec{a}_{\perp}$$

$$a = |\vec{a}| = \sqrt{a_{||}^2 + a_{\perp}^2} =$$

$$= \sqrt{\left(\frac{dv}{d\Delta}\right)^2 + \left(\frac{v^2}{r}\right)^2}$$



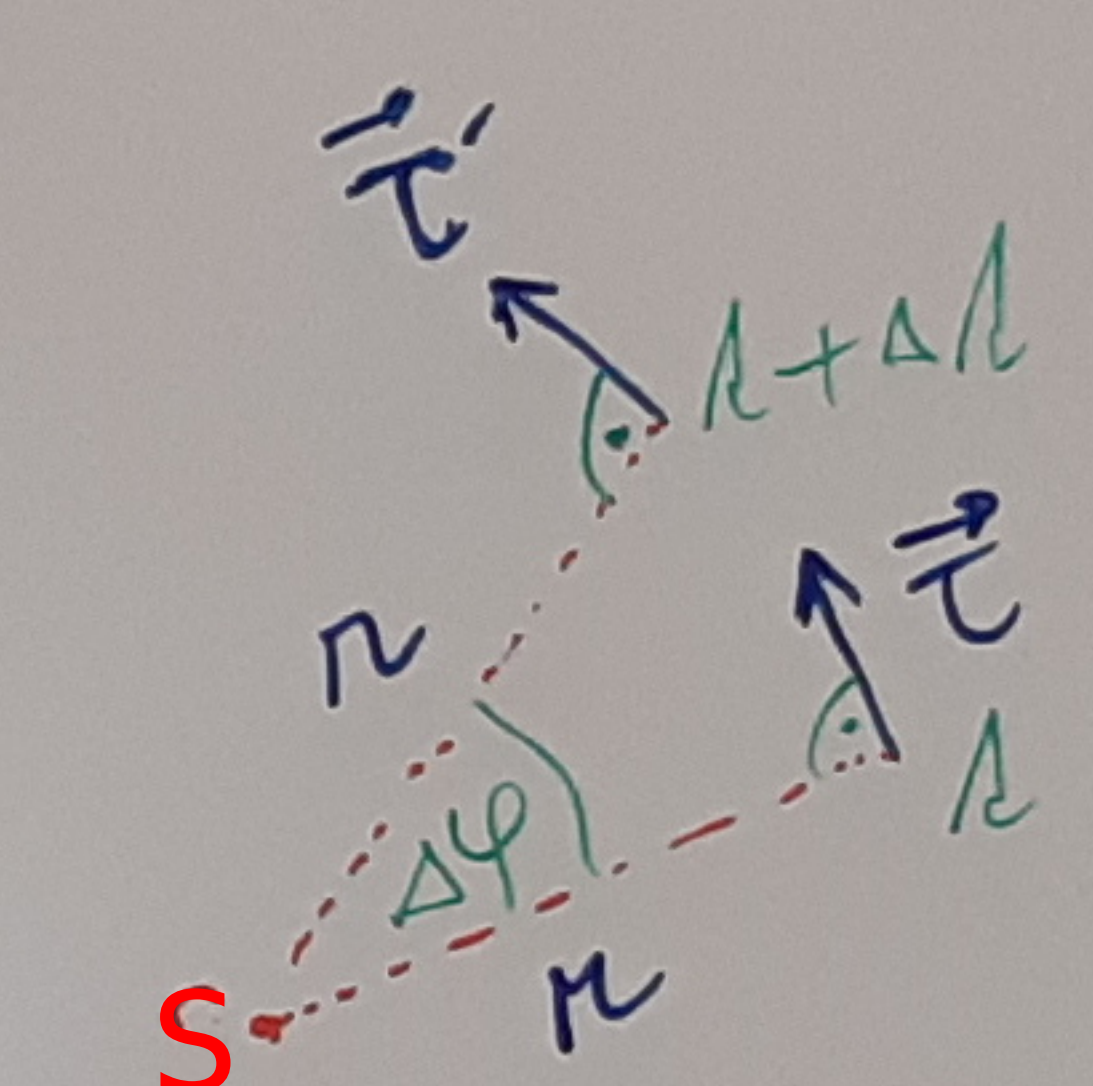
3.1 Uhlová rýchlosť a uhlové zrýchlenie

$$\vec{\omega} = \lim_{\vec{L} \rightarrow 0} \frac{\Delta \vec{L}}{\Delta \Delta} = \frac{d\vec{L}}{d\Delta}$$

smer $\vec{\omega} \perp$ na rovinu pohybu, orientácia $\vec{\omega}$ podľa pravidla pravej ruky

$\vec{\omega}$ = uhlová rýchlosť

$$\vec{\xi} = \frac{d\vec{\omega}}{d\Delta} = \text{uhlové zrýchlenie}$$



$$|\vec{\tau}| = |\vec{\tau}'| = 1$$

$$|\Delta \vec{\tau}| = 1 \Delta \varphi = \Delta \varphi$$

dĺžka oblúku kružnice

$$\Delta \vec{\tau} \perp \vec{\tau}, \vec{\tau}'$$

$\Rightarrow \Delta \vec{\tau}$ smeruje do bodu S

Zavedme $\vec{\rho} \perp \vec{\tau}$
 $|\vec{\rho}| = 1$, orient. od S

$$\Delta \vec{\tau} = -\vec{\rho} \Delta \tau = -\vec{\rho} \Delta \varphi$$

