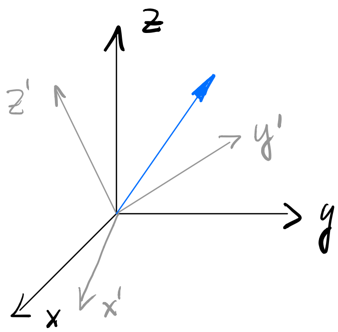

$$\vec{A}(t) = \sum_i A_i(t)\, \vec{e}_i{}'(t)$$

$$\left.\frac{d\vec{A}}{dt}\right|_B = \sum_i \frac{dA_i(t)}{dt}\, \underline{\underline{\vec{e}_i{}'(t)}}$$

$$\boxed{\left.\frac{d\vec{A}(t)}{dt}\right|_L = \left.\frac{d\vec{A}(t)}{dt}\right|_B + \vec{\omega} \times \vec{A}}$$

$$\left.\frac{d\vec{\omega}}{dt}\right|_L = \left.\frac{d\vec{\omega}}{dt}\right|_B + \vec{\omega} \times \vec{\omega} = \left.\frac{d\vec{\omega}}{dt}\right|_B$$

Winkelgeschwindigkeit
($\hat{\vec{\omega}}$: Rotations-achse
$|\vec{\omega}|$: Winkel-geschwindigkeit)

$$D_L \equiv \left.\frac{d}{dt}\right|_L \quad , \quad D_B \equiv \left.\frac{d}{dt}\right|_B$$

$$D_L \vec{\omega} = D_B \vec{\omega} + \vec{\omega} \times \vec{\omega} = D_B \vec{\omega}$$

Ortsvektor $\quad D_L \vec{r} = D_B \vec{r} + \vec{\omega} \times \vec{r}$

$$\left.\frac{d}{dt}\left(\left.\frac{d\vec{r}}{dt}\right|_L\right)\right|_L = D_L\left(D_L \vec{r}\right) = D_L\left(D_B \vec{r} + \vec{\omega} \times \vec{r}\right)$$

$$= D_B\left(D_B \vec{r} + \vec{\omega} \times \vec{r}\right) + \vec{\omega} \times \left(D_B \vec{r} + \vec{\omega} \times \vec{r}\right)$$

$$\left.\frac{d^2\vec{r}}{dt^2}\right|_L = \left.\frac{d^2\vec{r}}{dt^2}\right|_B + \left.\frac{d\vec{\omega}}{dt}\right|_B \times \vec{r} + 2\,\vec{\omega} \times \left.\frac{d\vec{r}}{dt}\right|_B + \vec{\omega} \times \left(\vec{\omega} \times \vec{r}\right)$$

Beschl. im bewegten System

azimutale Beschleunig.

Coriolis-beschleunigung

Zentrifugal-beschleunigung

Newton'sche Gesetz:

$$\vec{F} = m \left.\frac{d^2\vec{r}}{dt^2}\right|_L = m \frac{d^2\vec{r}}{dt^2} + (\qquad)$$

$$\vec{F}_{eff} = m \left.\frac{d^2\vec{r}}{dt^2}\right|_B$$

$$\Longrightarrow \quad \vec{F}_{eff} = \vec{F} - \underbrace{m \left.\frac{d\vec{\omega}}{dt}\right|_B \times \vec{r}}_{\text{azimutale Kraft}} - \underbrace{m\, 2\vec{\omega} \times \frac{d\vec{r}}{dt}}_{\text{Corriolis-Kraft}} - \underbrace{m\, \vec{\omega} \times (\vec{\omega} \times \vec{r})}_{\text{Zentrifugal-Kraft}}$$