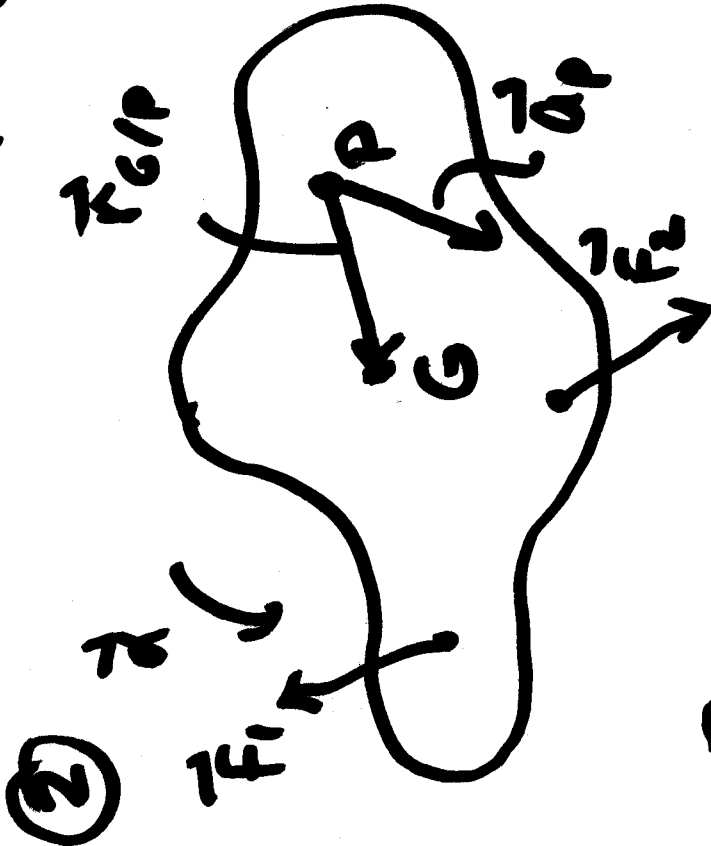


UNIVERSITY of Idaho There is another form of

Newton's laws that often convenient



$$\Sigma \vec{M}_P = I_P \vec{\alpha} + m \vec{r}_{G/P} \times \vec{\alpha}, \quad \Sigma \vec{F} = m \vec{a}_G$$

$$A. \quad \Sigma \vec{H}_p = I_p \vec{\alpha} + \underbrace{m \vec{r}_{cA} \times \vec{a}_p}$$

$\Sigma M_K = \text{Kinetic moment}$

Section 17.3 - Subset Case \Rightarrow Translation, No Rotation

$$\text{If } \vec{\alpha} = 0 \Rightarrow \Sigma \vec{H}_G = 0, \quad \Sigma \vec{F}_i = m \vec{a}_G$$

$\Rightarrow \vec{a} = \vec{a}_G$ because not no rotation.



University of Idaho For a planar problem;

Rigidly Connected

$$\sum F_{xi} = m a_x$$

$$\sum F_{yi} = m a_y$$

$$\sum M_G = 0$$

Curvilinear Translation

$$\sum F_{ni} = m a_n$$

$$\sum F_{ti} = m a_t$$

$$\sum M_G = 0$$

Section 17.4 - Fixed Axis Rotation

(later)