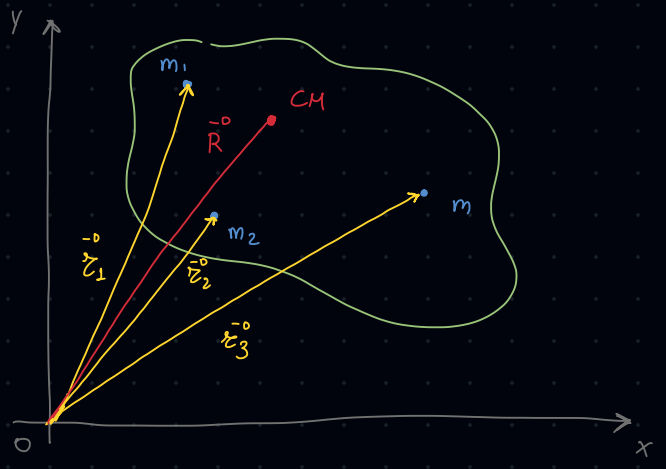

$$\vec{R} = \frac{\sum_i m_i \vec{r}_i}{\sum_i m_i} \quad \text{con } \sum_i m_i = M$$

$$= \frac{\sum_i m_i \vec{r}_i}{M}$$

$$\vec{v}_{CM} = \frac{d\vec{R}}{dt} = \frac{\sum_i m_i \vec{v}_i}{M} \quad (\vec{p}_i, \vec{P}_{TOT})$$

$$\Rightarrow \vec{v}_{CM} = \frac{\vec{P}_{TOT}}{M}$$

1 sola velocità

$$\Rightarrow \vec{P}_{TOT} = \vec{v}_{CM} \cdot M$$

$$\vec{a}_{CM} = \frac{d\vec{v}_{CM}}{dt} = \frac{\sum_i m_i \vec{v}_i}{M} = \frac{\sum_i m_i \vec{a}_i}{M} \quad (\vec{a}, \vec{F})$$

$$\Rightarrow \vec{a}_{CM} = \frac{\sum_i \vec{F}_i}{M} \Rightarrow \sum_i \vec{F}_i = M \cdot \vec{a}_{CM}$$

1 sola accelerazione

$$\sum_i \vec{F}_{ext} = M \cdot \vec{a}_{cm}$$

II eq dinamica $\vec{M} = \frac{d\vec{L}}{dt}$ NON SI APPLICA AL CM