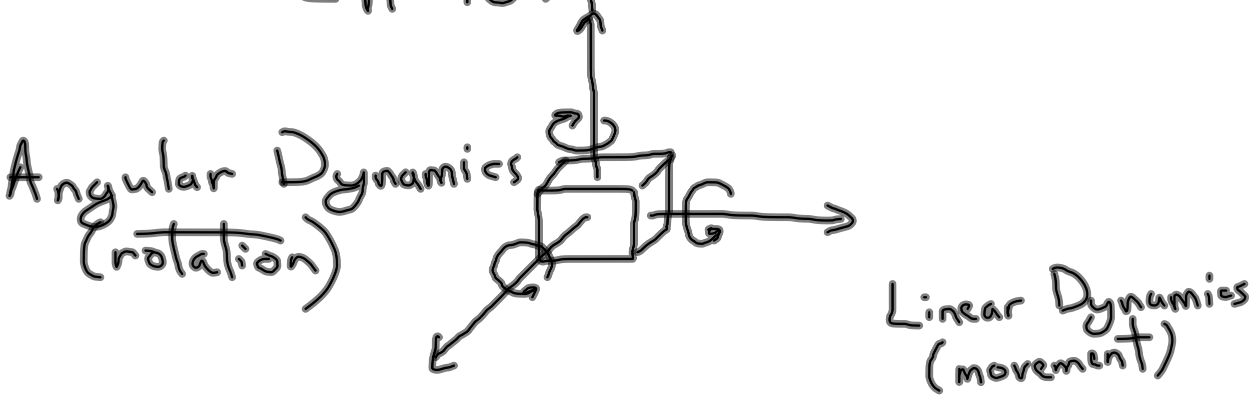
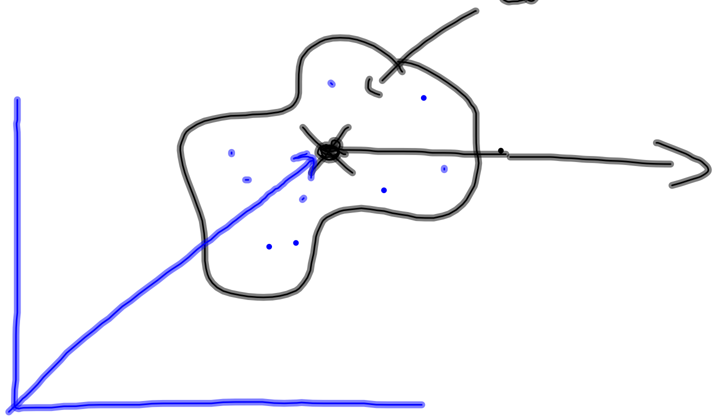
Physics - rigid body dynamics

Ch 12.4...



Linear Dynamics



$r(t)$ position over time m

$v(t)$ velocity m/s

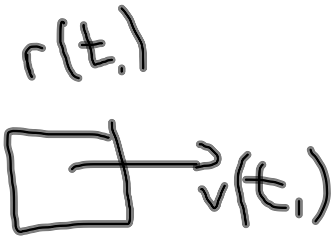
$a(t)$ accel. m/s^2

Force $F(t) = m \cdot a(t)$ $kg\, m/s^2$ (Newtons)

$$F_{net}(t) = \sum_{i=1}^{N} f_i(t)$$

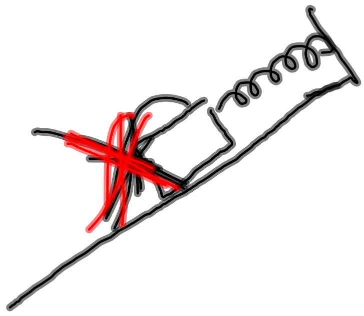
momentum $p(t) = m \cdot v(t)$

$$F(t) = \frac{dp(t)}{dt}$$



Δt : time since last frame

$$r(t_2) = r(t_1) + v(t_1)\Delta t$$



<u>Forces</u>

gravity

spring

friction

explosion

$$F_{net} = m \cdot a(t)$$

$$a(t_2) = \frac{F_{net}}{m}$$

$$v(t_2) = v(t_1) + a(t_2)\Delta t$$

Explicit Euler