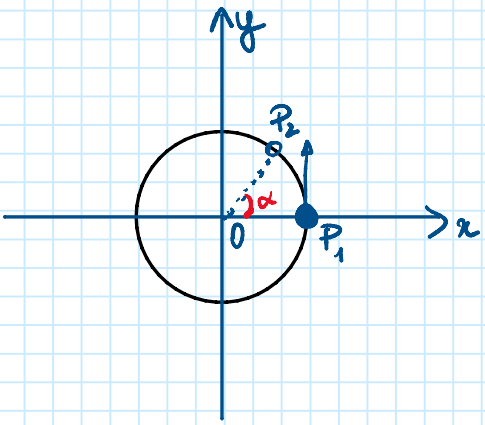
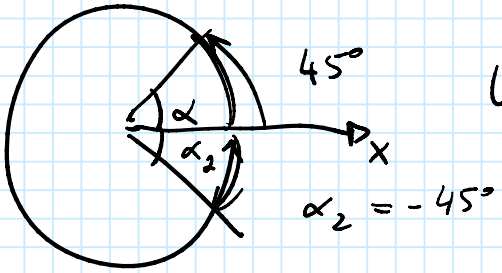
Lezione 31/03/2020

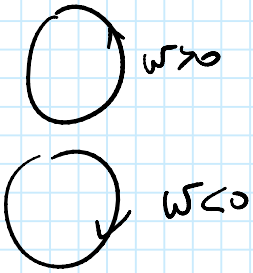
Il moto circolare

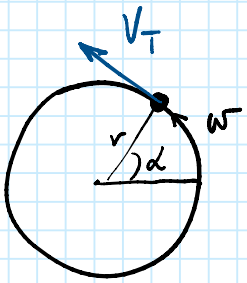


	Rettilinee	Angolari	
Spazio	x, y	α	rad
Velocità	$v = \frac{\Delta s}{\Delta t}$	$\omega = \frac{\Delta \alpha}{\Delta t}$	$\frac{rad}{s}$



$\omega \begin{cases} > 0 : \Delta\alpha > 0 & \text{ANTI ORARIO} \\ < 0 : \Delta\alpha < 0 & \text{ORARIO} \end{cases}$





$$V_T = \frac{\Delta s}{\Delta t} = \frac{\Delta l}{\Delta t} = r \cdot \frac{\Delta \alpha}{\Delta t} = r\,\Delta\omega$$

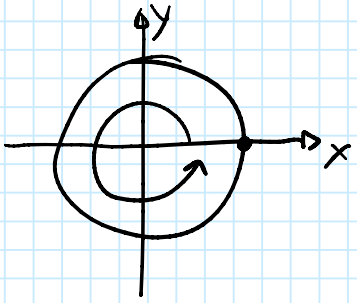
$$r \cdot \alpha = \frac{l}{r} \cdot r \Rightarrow \Delta l = r \cdot \Delta\alpha$$

$$\boxed{V_T = r\,\omega}$$

$(\alpha) \rightarrow \omega = \frac{\Delta \alpha}{\Delta t}$

$x = x_0 + v t + \frac{1}{2} a t^2$

$\boxed{\alpha = \alpha_0 + \omega t}$



$\alpha_{TOT} = 2\pi = 360° = \text{angolo giro}$ rad

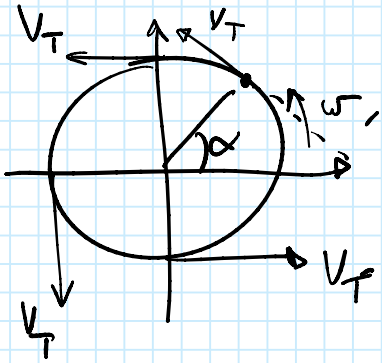
$\omega = \frac{2\pi}{T} = \text{cost} \rightarrow T = \text{periodo} = \frac{2\pi}{\omega}$ $\quad \frac{\text{rad}}{\text{rad/s}} = s$

$f = \frac{1}{T} \rightarrow \frac{1}{s} = s^{-1} = Hz$ Hertz

$\omega = \frac{2\pi}{1s} = 6{,}28 \frac{\text{rad}}{s} \rightarrow T = 1\,s \qquad f = 1\,Hz$

$\omega = \frac{2\pi}{2s} = 3{,}14 \frac{\text{rad}}{s} \rightarrow T = 2\,s \qquad f = 0{,}5\,Hz$

$T = 0{,}5\,s \qquad f = 2\,Hz$



$\Rightarrow$ V_T varia nel tempo

$\Downarrow$

ma V_T può variare solo se esiste una accelerazione!

$a_c = \text{a. centripeta} = \frac{V_T^2}{r} = \frac{r^2\omega^2}{r} = r\omega^2$

$V_T = r\omega \rightarrow V_T^2 = r^2\omega^2$

$$a_c = \begin{cases} \frac{V_T^2}{r} \\ r\omega^2 \end{cases}$$