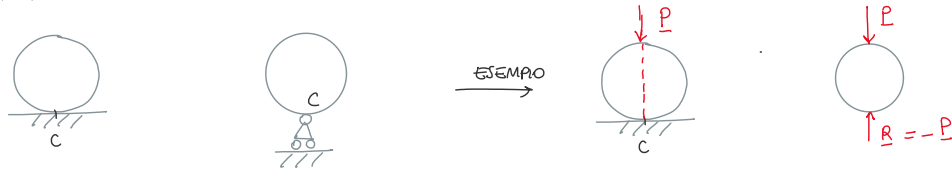


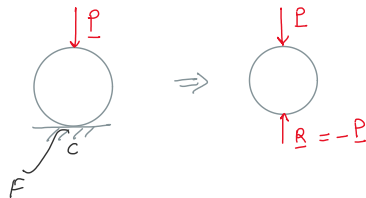
# Statica in presenza di attrito

venerdì 8 novembre 2024 12:36

## APPOGGIO SEMPLICE O LISCIU

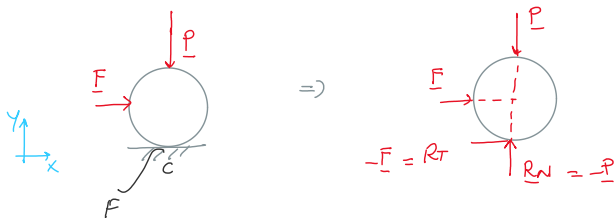


1° OSSERV. : Cosa cambia se c'è attrito?  $\Rightarrow$  APPOGGIO CON ATTRITO



in queste condizioni di carico non cambia niente!

2° OSSERV. : cosa succede se  $F$



- a) Quanto  $F$  per innescare il moto
- b) Quanto  $F$  per avere moto  $v = \text{cost}$

## ATTRITO STATICO - DISCO FERMO

Eppure:

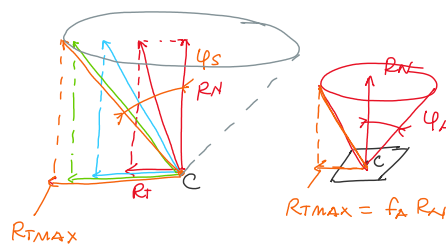
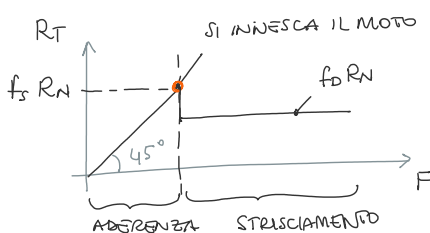
$$\begin{cases} F + R_T = 0 \\ P + R_N = 0 \\ R_T = F \\ R_N = P \end{cases} \Rightarrow R_T \text{ e } R_N?$$

LEGGE DI COULOMB:

FORZA DI ATTRITO STATICO

$$R_T \leq f_A R_N$$

$f_A$  = COEFF. ATTRITO STATICO / DINAM.



$$\tan \varphi_A = f_A$$

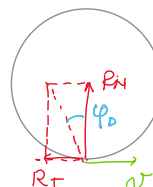
## ATTRITO DINAMICO O STRUSCIAMENTO

FORZA DI ATTRITO DI STRISC.

$$R_T = f_D R_N$$

$$\tan \varphi_D = f_D$$

$$\varphi_D < \varphi_A$$

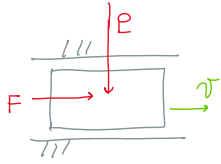


$R_T$  SI OPPONE ALLA  $v^{REL}$  NEL CONTATTO

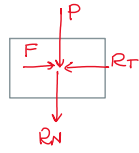
$\Rightarrow$  SONO RELAZIONI TRA MODULI

$$|R_T| \leq f_d |R_N|$$

$$|R_T| = f_d |R_N|$$



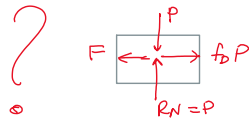
), Quanto deve valere F per avere moto o cast



$$|R_T| = f_d |R_N|$$

② INCOGNITE = F, R\_N

$$\begin{cases} x & -P - R_N = 0 \\ y & F - R_T = 0 \end{cases}$$

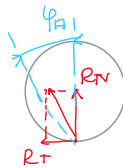
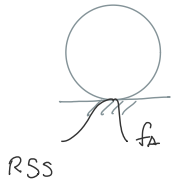


$$\begin{cases} R_N = -P < 0 \\ |R_T| = f_d |(-P)| \\ F = R_T = -f_d P \end{cases}$$

⇒ LEGGE DI COULOMB:

$f_s, f_d$  sono indipen.  $\begin{cases} A \\ v^{rel} (f_d) \\ P \end{cases}$

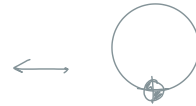
ATTRAITO STATICO ⇒ ROTOLAMENTO SENZA STRISCIAIMENTO



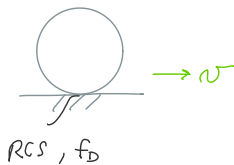
R sta dentro cono di attrito statico

$$|R_T| \leq f_A |R_N|$$

⇒ 2 INCOGNITE  
↓  
 $R_T, R_N$



ATTRAITO STRISCIAIMENTO ⇒ ROTOL. CON STRISC.



$$|R_T| = f_d |R_N|$$

⇒ 1 INCOGN  
↓  
 $R_N$

