

$$W=0=\sum_{k=1}^n F_kv_k+\sum_{k=1}^n C_k\omega_k+\sum_{k=1}^n F_{ik}v_{ik}+\sum_{k=1}^n C_{ik}\omega_{ik}$$

$$m_{eq} \ddot{x}_{p_1} + r_{eq} \dot{x}_{p_1} + k_{eq} x_{p_1} = F(t)$$

$$X_o=\frac{F_o}{\sqrt{(k_{eq}-m_{eq}\Omega^2)^2+(r_{eq}\Omega)^2}}$$

$$w_o=\sqrt{\frac{k_{eq}}{m_{eq}}}$$

$$h=\frac{r_{eq}}{r_c}=\frac{r_{eq}}{2m_{eq}w_o}$$

$$a=\frac{\Omega}{\omega_o}$$

$$|X(a)|=\frac{X_{st}}{\sqrt{(1-a^2)^2+(2ah)^2}}=X_{st}\cdot H(a)$$

$$C_{rR}=uN=f_vRN$$

$$\text{A condizioni di limite: } T=f_aN \text{ o } T=f_dN$$

$$a=\dot{\omega}\times R-\omega^2R+a_{co}$$

$$a_{co}=2w\times v_{rel}$$

$$v=\omega R=|\dot{\theta}|R$$

$$x=\theta R$$

$$\Omega(R\pm r)=\omega r$$

$$\frac{d}{dt}\frac{\partial E_c}{\partial \dot{q}_i}-\frac{\partial E_c}{\partial q_i}+\frac{\partial D}{\partial q_i}+\frac{\partial V}{\partial q_i}=\frac{\delta L_i}{\delta q_i}$$

$$E_c=\sum\frac{1}{2}mv^2+\sum\frac{1}{2}J\omega^2$$

$$V=\frac{1}{2}k\Delta l^2+Mgh$$

$$D=\frac{1}{2}r\dot{\Delta l}^2$$

$$J_{GL}=\frac{mL^2}{12}$$

$$J_{GiG}=m_i|G_i-G|^2$$

$$J_0=n(J_{GL}+J_{GiG})+M\overline{OG}^2$$

$$C_m=C_o\left(1-\frac{w_m}{w_s}\right)$$

$$\eta_d \text{ if } \Pi_e > \Pi_u$$

$$\text{elif } \Pi_e < \Pi_u \implies \eta_r$$