



$$\varphi = \theta - \phi$$

$$m\vec{a} = \vec{F} = \vec{F}_g + \vec{F}_E + \vec{F}_D$$

$$\begin{cases} ma_r = F_r \Rightarrow m(\ddot{r} - r\dot{\theta}^2) = -\frac{Gm \cdot m_T}{r^2} + P_T A \cos(\theta + \phi) - D \cdot B \cdot \dot{r}^2 \\ ma_\theta = F_\theta \Rightarrow m(2\dot{r}\dot{\theta} + r\ddot{\theta}) = P_T A \sin(\theta + \phi) + D \cdot B \cdot (r\dot{\theta})^2 \end{cases}$$

$$\begin{cases} m\ddot{r} = m\dot{r}\dot{\theta}^2 - \frac{Gm \cdot m_T}{r^2} + P_T A \cos(\theta + \phi) - D B \dot{r}^2 \\ mr\ddot{\theta} = -2m\dot{r}\dot{\theta} + P_T A \sin(\theta + \phi) - D B \cdot (r\dot{\theta})^2 \end{cases}$$

$$\ddot{r} = r\dot{\theta}^2 - \frac{Gm_T}{r^2} + \frac{P_T}{m} A \cos(\theta + \phi) - \frac{D}{m} \rho_0 e^{-\frac{r-r_T}{H_0}} \cdot \dot{r}^2$$

$$\ddot{\theta} = -2 \frac{\dot{r}\dot{\theta}}{r} + \frac{P_T \cdot r}{m r} A \sin(\theta + \phi) - \frac{D}{m r} \rho_0 e^{-\frac{r-r_T}{H_0}} r^2 \dot{\theta}^2$$

$$m_n = m_{n-1} - E P_T$$

Suez (rendimiento, potencia, 600))

$$0.5 \cdot dt$$

$$m_{e-z} = m_{e-z}$$

15 Me

edbe

returne

$$dt_2 = 0.5 dt$$