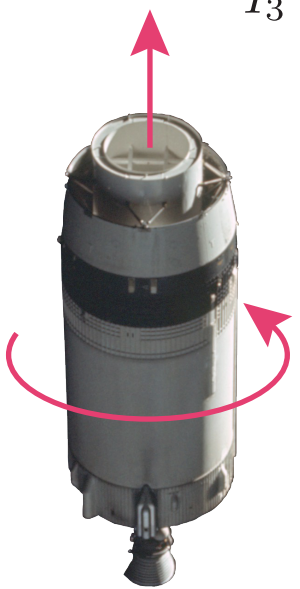
(a)

$$\omega = \dot{\psi} + \dot{\varphi} = \frac{I_0}{I_3}\dot{\varphi}$$

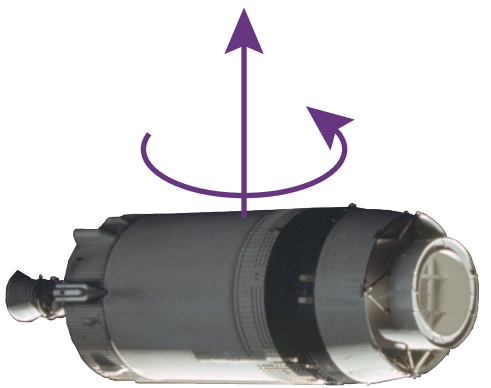


Maximum energy state for given L: all spin is about long axis

$$E = \frac{L^2}{2I_3}$$

(b)

$$\omega = \dot{\varphi}$$



Minimum energy state for given L: all spin is about short axis

$$E = \frac{L^2}{2I_0}$$

(c)

$$\dot{\psi}_{max} = \frac{\Delta I}{I_3}\dot{\varphi} \approx 4.3\dot{\varphi}$$ for SL- 8's