

Rotational Dynamics

$$J\dot{\vec{\omega}} = \vec{\omega} \times (J\vec{\omega}) + \vec{\tau}_{dist} + \vec{\tau}_{act}$$

Rotational Kinematics. Quaternions

$$q = [\eta, \vec{\epsilon}]$$

$$\dot{\vec{\eta}} = \frac{1}{2} \vec{\epsilon} \cdot \vec{\omega}_{ob}^b$$

$$\dot{\vec{\epsilon}} = \frac{1}{2} (\eta + Sq(\vec{\epsilon})) \vec{\omega}_{ob}^b$$

The Magnetorquer problem

$$\vec{\tau} = \vec{m} \times \vec{\beta} \quad (1)$$