

$$\sum \vec{\tau}_{\text{ext}} = \frac{d\vec{L}}{dt} \quad \text{If } \sum \vec{\tau}_{\text{ext}} = 0, \text{ then}$$

$$\frac{d\vec{L}}{dt} = 0, \quad d\vec{L} = 0 \quad \text{or} \quad \vec{L} = \text{constant}$$

$$\therefore \vec{L}_{\text{sys}} = \vec{L}_{\text{sys}}$$

★ Law of Conservation of Angular Momentum