

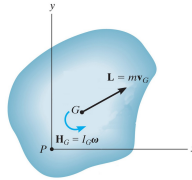
19.3 Conservation of Momentum

Angular momentum **H**:

$$\vec{H}_P = \vec{r}_G \times (m\vec{v}_P) + I_P\vec{\omega}$$

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$$\vec{H}_G = I_G\vec{\omega}$$



Principle of Impulse – Momentum: $\sum \int M_G dt = \Delta H_G$

for rotation about fixed point O : $\sum \int M_O dt = \Delta H_O$

19.3 Conservation of Momentum

Conservation of Momentum

If there are no external forces on a system, then

$$\Delta(m\mathbf{v}_G) = m\Delta\mathbf{v}_G = 0$$

If there are no external moments on a system about point P , then

$$\Delta H_P = \Delta(I_P\omega) = 0$$

total system momentum