

Use this matrix as your Inertia tensor. I got this by substituting $m=M/2$, $h=L/3$ in cage-ball Inertia tensor in center-of-mass system.

$$\left(\begin{array}{ccc} \frac{31}{135} & -\frac{1}{12} & -\frac{1}{36} \\ -\frac{1}{12} & \frac{31}{135} & -\frac{1}{36} \\ -\frac{1}{36} & -\frac{1}{36} & \frac{2}{5} \end{array} \right) \mathbf{ML}^2$$