

Effects of large core properties on ball
velocity and direction

$$E_k = \frac{1}{2} m v^2$$

$$E_k = \int \mathbf{F} \cdot d\mathbf{x} = \int \mathbf{v} \cdot d\mathbf{p} = \frac{m v^2}{2}$$



$$E_{\text{rotation}} = \frac{1}{2} I \omega^2$$

$$E_r = \int \frac{v^2 dm}{2} = \int \frac{(r\omega)^2 dm}{2} = \frac{\omega^2}{2} \int r^2 dm = \frac{\omega^2}{2} I = \frac{1}{2} I \omega^2$$

$$I \stackrel{\text{def}}{=} \int_V r^2(\mathbf{m}) dm = \iiint_V r^2(x, y, z) \rho(x, y, z) dx dy dz$$

$$R_g = \sqrt{\frac{I}{A}}$$

CAN IT BE DONE?!

