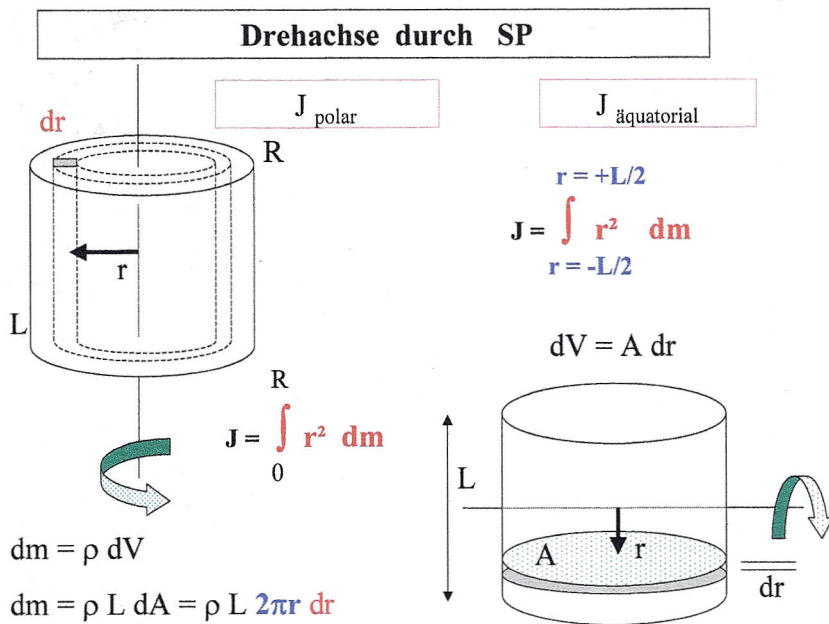


4.1. Drehachse durch den Schwerpunkt (SP)



$$J = \int_0^R r^2 dm \quad | \quad dm = \rho L 2\pi r dr$$

$$J = \int_0^R (r^2 \rho L 2\pi r) dr$$

$$J = \int_0^R (\rho L 2\pi r^3) dr$$

$$J = \rho L 2\pi \int_0^R r^3 dr$$

$$J = \rho L 2\pi \left. \frac{1}{4} r^4 \right|_0^R$$

$$J = \frac{\rho L 2\pi R^4}{4}$$

$$J = \frac{\pi \rho L R^4}{2}$$

J_{polar}