



A circular disk is suspended by a wire attached to the top of some fixed support. When the disk is twisted through some small angle θ , the twisted wire exerts a restoring torque on the body which satisfies $\tau = I \alpha = I \frac{d^2\theta}{dt^2} = -\kappa \theta$, where κ is referred to as the torsion constant of the wire.

Find the period of the oscillation.

- A) $T = \sqrt{\frac{I}{\kappa}}$.
- B) $T = 2\pi \sqrt{\frac{I}{\kappa}}$.
- C) $T = \sqrt{\frac{\kappa}{I}}$.
- D) $T = 2\pi \sqrt{\frac{\kappa}{I}}$.

Present equation of motion implies that, $\omega = \frac{\kappa}{I}$, in turn: $T = 2\pi \sqrt{\frac{I}{\kappa}}$.

Answer **B** .