

Answer on Question #75585, Physics Mechanics Relativity

a 0.2 ball is whirled around on a 0.3 m string at a rate of 14 revolutions in 20 seconds. What is the angular momentum of the ball?

Solution.

$$L = J \cdot \omega$$

$$J = m \cdot r^2$$

$$\omega = 2 \cdot \pi \cdot f$$

$$f = \frac{14 \text{ revolutions}}{20 \text{ seconds}} = 0.7 \text{ s}^{-1}$$

$$\omega = 2 \cdot 3.14 \cdot 0.7 = 4.396$$

$$L = m \cdot r^2 \cdot \omega = 0.2 \cdot 0.3^2 \cdot 4.396 = 0.079 \frac{\text{kg} \cdot \text{m}^2}{\text{s}}$$

Answer: $L = 0.079 \frac{\text{kg} \cdot \text{m}^2}{\text{s}}$

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