Answer on Question 73271, Physics, Mechanics, Relativity

Question:

Wheels on a bicycle have a radius of $0.50\ m$. If the bicycle is traveling at a speed of $4.0\ m/s$, what is the period of rotation of its wheels?

Solution:

When the wheel of a bicycle makes one revolution it travels a distance equals to its circumference. Therefore, we can find the period of rotation of bicycle wheels from the formula:

$$v = \frac{C}{T} = \frac{2\pi r}{T},$$

here, $v = 4.0\ m/s$ is the speed of the bicycle, $C = 2\pi r$ is the circumference of the bicycle wheel, $r = 0.50\ m$ is the radius of the bicycle wheel and T is the period of rotation of bicycle wheels.

Then, we get:

$$T = \frac{2\pi r}{v} = \frac{2 \cdot \pi \cdot 0.50\ m}{4\ \frac{m}{s}} = 0.785\ s.$$

Answer:

$T = 0.785\ s.$