

Answer on Question #58752, Physics / Other |

The speed of propagation of the action potential (an electrical signal) in a nerve cell depends (inversely) on the diameter of the axon (nerve fiber). If the nerve cell connecting the spinal cord to your feet is 1.1 m long, and the nerve impulse speed is 18 m/s, how long does it take for the nerve signal to travel this distance?

Solution:

The time is

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

$$t = \frac{d}{v} = \frac{1.1 \text{ m}}{18 \text{ m/s}} = 0.061 \text{ s}$$

Answer. 0.061 s