

Wave Basics

9. What's Wrong With This?

Suppose you're watching a science fiction movie and one of the scenes involves a spaceship battle in outer space. Spaceship A launches a successful strike on spaceship B. The scene is presented from the perspective of spaceship A. The occupants of spaceship A view spaceship B blowing up as the result of the successful missile strike. They see the flames of the explosion and shortly thereafter hear the thunderous sound of the explosion.

While the scene is definitely exciting, there is a significant fault with it in terms of the physics. What law of physics was violated in the filming of the scene? Explain.

10. The arrows on the diagrams below represent the direction of particle motion.



Diagram A shows a ____ pulse and diagram B shows a ____ pulse.

a. longitudinal, transverse

b. transverse, longitudinal

11. Compare the direction in which particles of the medium vibrate for a longitudinal wave compared to a transverse wave. Reference the diagram in question #10 in your discussion.