Interference of Waves

What happens when two pulses pass through the same point in a medium?

How can two waves, moving in opposite directions, exist simultaneously in the same space?

Obtain a slinky and a piece of masking tape.

1. Spread the slinky to a length of approximately 5 m. Use a line on the floor as the rest position, and use two other lines on the floor to mark the end points.

2. Attach a piece of tape to one of the coils near the middle of the spring. YOU MUST REMOVE THIS PIECE OF TAPE BEFORE YOU RETURN THE SLINKY!

3. Have the group members at each end of the spring generate transverse pulses on the same side of the spring. Try to generate the pulses so that they meet at the strip of tape near the middle of the spring.Focus on the nature of the spring's motion when the pulses interact. This complex interaction occurs quite quickly and may need to be repeated a few times until you are confident you can see what is happening. Discuss the observations with your group members.

Record your observations in sketches and writing.

4. Again have group members at each end of the spring generate transverse pulses. This time, however, generate them on opposite sides of the spring. Again, time the pulses so that they meet near the centre of the spring. Observe how these pulses interact. Discuss the observations with your group members.

Record your observations in sketches and writing.

Questions

1. When pulses on opposite sides of the spring meet, does the amplitude increase or decrease in the region of overlap?

2. When pulses on the same side of the spring meet, does the amplitude increase or decrease in the region of overlap?