

Objective: Understand wave superposition and predict results of wave interference.

Materials

- Snakey Spring (2m)
- Double-Length Slinky
- Large empty tiled hallway

(Snakey Spring)

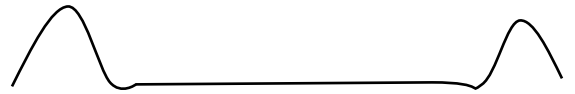
Observe

1. Lay the snakey spring (long thin spring) on the tile with a person at each end. Stretch the spring slightly. One person make a quick sideways motion to create a wave pulse in the spring.

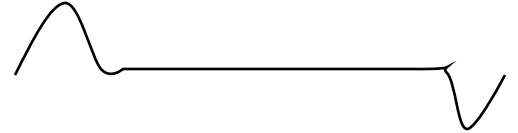


Hypothesis

2. Predict what will happen if the person at both ends make a wave pulse at the same time. What happens when the pulses meet?



3. Predict what will happen if one person pulses "up" and the other "down"?



Test

4. Test each hypothesis and record your results here. Pay special attention to the amplitudes of the pulses. If there is small tile on the floor, you could use that as a grid to measure the amplitude.

a. Pulse same direction:

- i. What happened to the amplitude when the pulses met? _____
Sketch it.

- ii. What happened to the individual pulses after they met? _____
Sketch it.

b. Pulse opposite direction:

- i. What happened to the amplitude when the pulses met? _____
Sketch it.

- ii. What happened to the individual pulses after they met? _____
Sketch it.

Conclusion

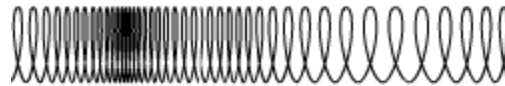
5. What happens when two different wave pulses meet (talk about amplitude)?

6. What happens to the individual wave pulses after they meet (talk about amplitude)?

Continued on back...

(Double-Length Slinky)**Observe**

1. Take care not to tangle the slinky. Lay the double-length slinky on the tile with a person at each end. Stretch the spring so that it is approximately 2 meters long. One person make a quick forward and back motion to create a wave pulse in the slinky.
2. Amplitude in this case is how compressed the wave pulse is.

**Hypothesis**

3. Predict what will happen if the person at both ends make a wave pulse at the same time. What happens when the pulses meet? _____

Test

4. Test each hypothesis and record your results here. Pay special attention to the amplitudes of the pulses.
 - a. What happened to the amplitude when the pulses met? _____
Sketch it.

 - b. What happened to the individual pulses after they met? _____
Sketch it.

Conclusion

5. What happens when two different wave pulses meet (talk about amplitude)?

6. What happens to the individual wave pulses after they meet (talk about amplitude)?

Put the slinky back in its bag so that it does not get tangled.