

Waves Lab

Purpose

- To study and analyze the wave properties of a spring and determine the relationship between tension and waves in a spring.

Materials

- Tension springs
- Slinky/spring
- Meter stick
- Timer/stopwatch

Procedure

1. Measure the mass of your spring in kg.
2. Stretch the spring. Record the distance of the stretched spring. Be as precise as possible.
3. Record the tension in the spring.
4. Send a pulse down the spring three times and record how long it takes for each trip. Take an average to obtain t_{avg} .
5. Take general notes on what happens to the wave as it propagates. (Does the velocity or amplitude change as the pulse travels along the spring? Does the wave speed appear to increase/decrease as tension is increased?)

Calculations (place before your conclusion in the report)

1. Complete the data table and copy it into your lab book.
2. Graph Experimental Velocity vs. Theoretical Velocity.
3. The theoretical value for the slope of your Experimental Velocity vs. Theoretical Velocity should be exactly 1. Compare your experimental calculations with the theory by performing a percent error analysis.