Waves Lab

Purpose

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

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. Repeat steps 1 – 4 to have a total of ten distances that cover a wide range of tensions.
6. 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

Complete the data table and attach it into your lab book. Show, once, how each quantity was calculated.

		Waves Lab Data				
			Experimental			Theoretical
Mass of Spring (kg)	Dist. (m)	T_{avg} (s)	velocity (m/s)	Tension (N)	μ(kg/m)	Sqrt(T/μ) (m/s)