# Lab 12: Standing Waves

Experiment for Physics 211 Lab at CSUF

## What You Need To Know:

## What You Need To Do:

### Part 1 – Examining the Wavelength

Based on your observations how many loops make up one complete wavelength? **Explain.**

### Part 2 – Examining the Linear Density

|  |  |  |  |
| --- | --- | --- | --- |
| **String Type** | **Mass (kg)** | **Length (m)** | **Linear Density (kg/m)** |
|  |  | 10 m |  |

Table – String Density

### Part 3 – Relationship Between L and n

Table – Part 3 Data

|  |  |  |  |
| --- | --- | --- | --- |
| **Length (m)** | **n** | **λ (m)** | **v (m/s)** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  | **Ave. v** |  |
|  |  | **FT** |  |
|  |  | **µ** |  |
|  |  | **v** |  |
|  |  | **% diff.** |  |

Looking back at the equations you just used and the results you got, what are the only things that you can do to change the speed of the wave on your string?

### Part 4 – Relationship Between n and FT

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **n** | **m (kg)** | **FT (N)** | **v (m/s)** | **λ (m)** | **v (m/s)** | **% diff** |
| **2** |  |  |  |  |  |  |
| **3** |  |  |  |  |  |  |
| **4** |  |  |  |  |  |  |

Table – Part 4 Data

### Part 5 – Relationship Between µ and L

Table – Part 5 Data

|  |  |  |  |
| --- | --- | --- | --- |
| **Your Data** | | **Other Table’s Data** | |
| **Linear Density** | **Length** | **Linear Density** | **Length** |
|  |  |  |  |

### Part 6 – Relationship Between L and FT

|  |  |  |
| --- | --- | --- |
| **Mass (kg)** | **Length (m)** | **Tension (N)** |
| **0.150** |  |  |
| **0.250** |  |  |
| **0.350** |  |  |

Table – Part 6 Data

### Part 7 – Analysis

For **Part 3** through **Part 6** write out the equation from **Checkpoint 1** in linear form then for each part of the lab state if your results agree with the relationship for the variables in your “massaged” equation. You must explain why as well.

Part 3

Part 4

Part 5

Part 6

## Conclusion

Follow the lab report guide to write a conclusion on this lab.

Submit any excel or graphical analysis data your instructor requests along with your report.

Conclusion