

Name: _____

Number: _____

Date: ____/____/____

Unit 14: Physical Optics

LAB 1: Single Slit Diffraction Patterns

Objective:

- Accurately predict location of maxima and minima when monochromatic light passes through a single slit and falls onto a screen that is very far away.
- Analyze the relationship between slit width and diffraction pattern.
- Analyze the relationship between wavelength and diffraction pattern.

Equipment:

- Two laser pointers of different wavelengths
- Single slit apparatus (with varying slit widths)

Phase¹ 1: Accurately predict location of maxima and minima when monochromatic light passes through a single slit and falls onto a screen that is very far away.

Background: Be sure to define all relevant terms and formula(s) and explain why your procedure will allow you to meet the objective.

Procedure:

¹ Interference humor

Data:

Perform an appropriate error analysis.

Conclusion:

Phase 2: Analyze the relationship between slit width and diffraction pattern.

Hypothesis:

Background: Be sure to define all relevant terms and formula(s) and explain why you made the prediction in your hypothesis.

Procedure: Use at least four trials, and incorporate a graph to help prove your hypothesis.

Data:

Conclusion:

Phase 3: Analyze the relationship between wavelength and diffraction pattern.

Hypothesis:

Background: Be sure to define all relevant terms and formula(s) and explain why you made the prediction in your hypothesis.

Procedure:

Data:

Conclusion: