

## Lab #6 Physics with Python I: Plotting

### A. Complete this:

YOUR NAME \_\_\_\_\_ SLOT \_\_\_\_\_

PLEASE MARK THE CIRCLE NEXT TO YOUR LAB SECTION:

- |  |   |
|--|---|
| <input type="radio"/> A, Prof Yecko, Mon 1–3 PM      | <input type="radio"/> B, Prof Webb-Mack, Tue 2–4 PM         |
| <input type="radio"/> C, Prof Yecko, Wed 10 AM–12    | <input type="radio"/> D, Prof Corn-Agostini, Thu 9 AM–11 AM |
| <input type="radio"/> E, Prof Webb-Mack, Tue 9–11 AM | <input type="radio"/> F, Prof Yecko, Fri 1 PM–3 PM          |

### B. Read and sign Academic Integrity Statement:

*I hereby attest that I have not given or received any unauthorized assistance on this assignment.*

\_\_\_\_\_  
Sign here

### C. Grading rubric:

CATEGORY AND VERY BRIEF GRADING COMMENTS.....	PTS AVAILABLE	PTS EARNED
Purpose	2	
Double Slit Plot	4	
N-slit Plot	4	
Single Slit Plots	8	
Question	1	
Conclusion	1	
<i>Total</i>	20	

# Lab #6: Diffraction & Interference Python Plotting

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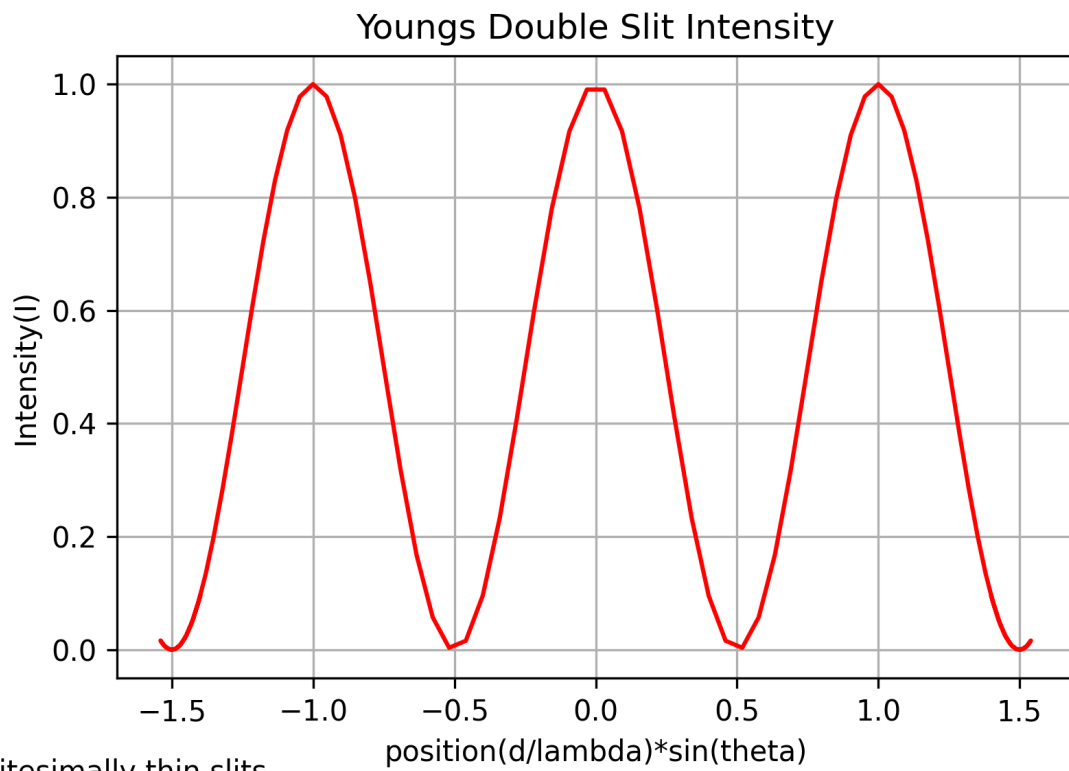
# Contents

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# 1. Purpose

The purpose of this lab is to plot the interference pattern of light as it passes through 1, 2, and N number of slits for both an infinitesimally small slit and a fixed width slit.

## 2. Results



infitesimally thin slits  
 $d = 1000 \text{ nm}$ ;  $\lambda = 649 \text{ nm}$

Table 2.1: Diffraction Grating

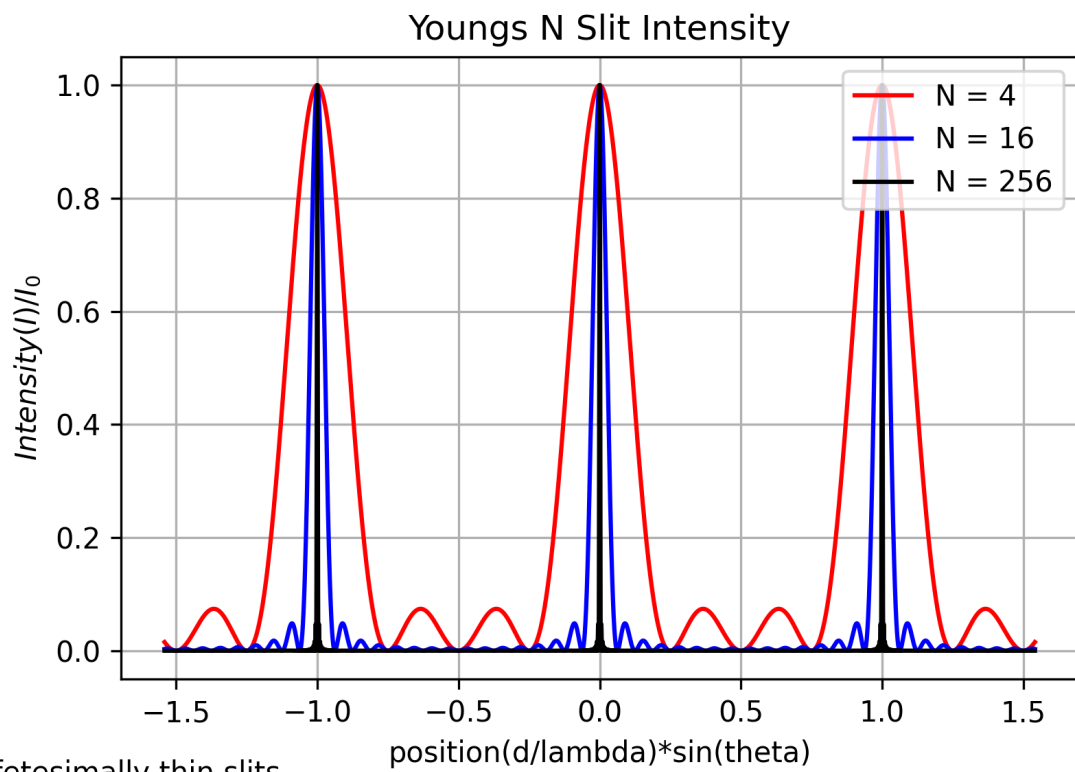


Table 2.2: Diffraction Grating

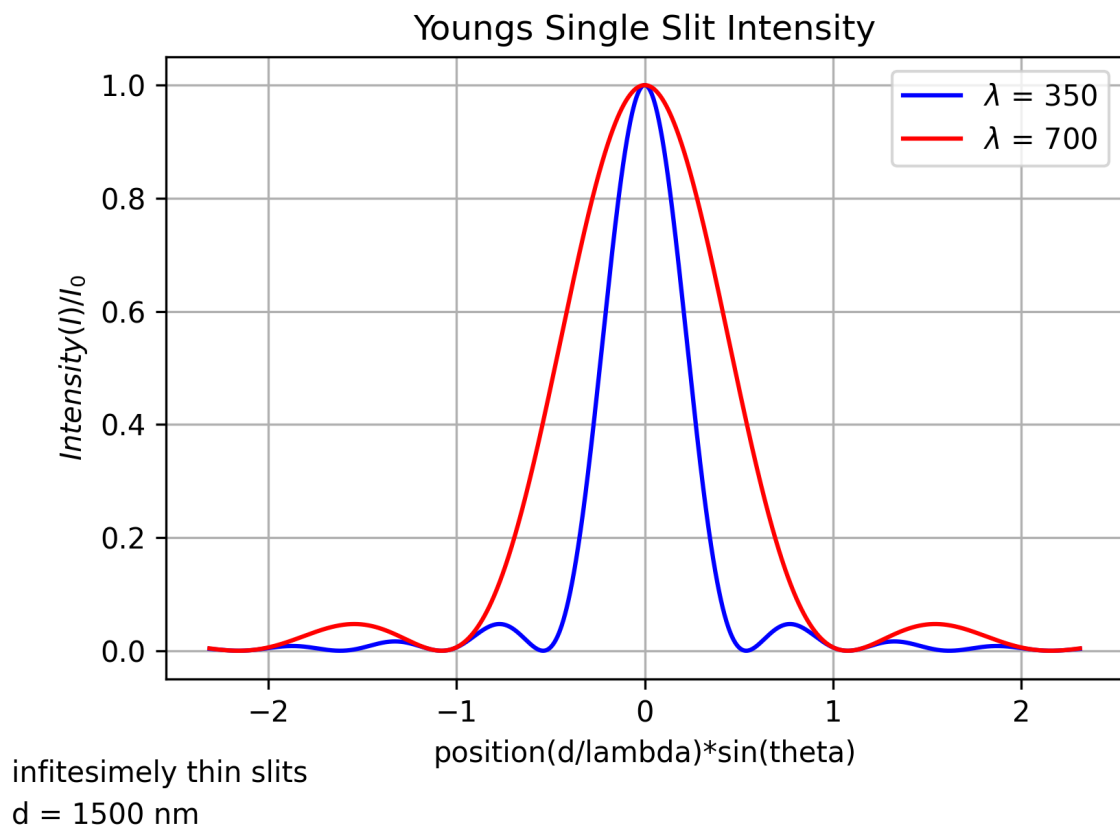
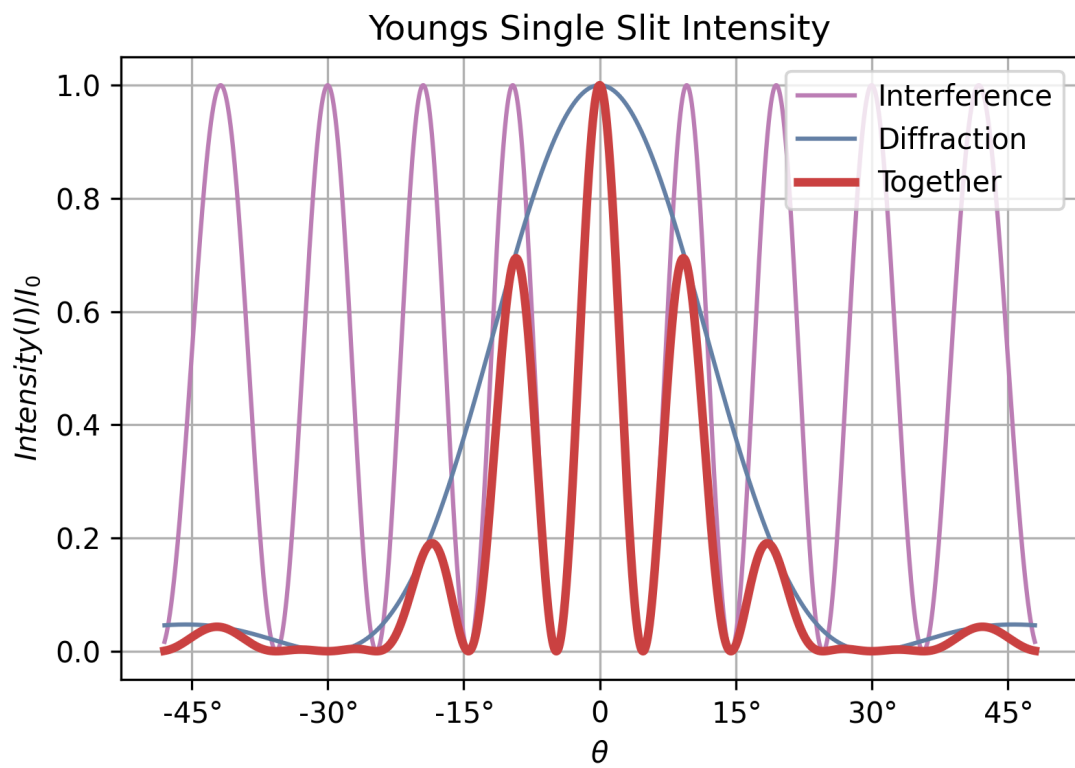


Table 2.3: Diffraction Grating



$\lambda = 350\text{nm}$     slit width = 700 nm    slit separation = 2100 nm

Table 2.4: Diffraction Grating

Question



### 3. Conclusions

By using the interference and wave like nature of light, the diffraction pattern created by a laser hitting a hair was used to determine the thickness of the hair. The error bounds of the calculated value agrees with literature values.

## 4. Answered Questions

Click the question to be brought to the location where the question is answered.

### 4.1 Question

missing  $m = 3$  order