Investigation of Diffraction Patterns and Interference, 1st Year Laboratory

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**Abstract** An experiment was carried out to compare the results from diffraction patterns when a laser illuminates various narrow slits, and comparing them with the predictions that we obtain from the wave theory of light. These diffraction patterns were captured by a CMOS camera, and processed using ImageJ and Python (Numpy, Matplotlib, SciPy).

1. Introduction

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IFFRACTION constant, represented by the letter *h*, is a fundamental Physical constant with wide-ranging applications across many fields. Its inception came about from Max Planck’s *(whom the constant is eponymously-named after)* efforts at the turn of the 19th century to explain the emissions of light from black bodies [[1]](#endnote-0)i, in *Planck’s Law*. The same number was later famously used to express the energy carried by a single photon [[2]](#endnote-1) as being directly proportional to its frequency, with Planck providing the mediating constant.

1. Theory

In order to obtain its value, we must begin with Planck’s

1. Method

A circuit was constructed as crudely drawn below to determine .

1. Results, Uncertainties, and Discussion

Preliminary data was obtained prior to accurate data collection t

1. Conclusion

Our final calculated value of g was (6.90±0.25)×10-34J.s, which

1. References, Appendices

1. i Andrews, David (2000). p54, An Introduction to Atmospheric Physics, Cambridge University Press [↑](#endnote-ref-0)
2. Liddle, Andrew (2015). p16-17, An Introduction to Modern Cosmology, John Wiley & Sons, Obtained from Google Books [↑](#endnote-ref-1)