

# Beginning Physics Webinar

Practical Activities: Light and Waves  
Rachael Gore, Albert Park College

# Overview: 10:00-11:45

10:00am

## Practical Activities and the Practical Investigations in Units 2 and 4

- i) What are some of the practical activities that can be done in Unit 2 and the modified Unit 4?
- ii) Managing the Practical Investigations in 2020, keeping in mind that this year's Year 11 students will be doing the current course in 2021. Different strategies will be discussed for generating topics, supervising the experimental component, compiling a poster and assessing the task.
- iii) Guide to reporting on data and data analysis

Parts i) and ii) to be presented Jane Coyle (St Columba's College), Rachael Gore (Albert Park College) and Paul Walters (Swinburne Senior Secondary College). Part iii) by Dr Barbara McKinnon

# Light and Matter (Possible Remote Setting)

- Stile or Google Docs for embedded worksheets to monitor student progress
- Demonstrations using Youtube
- Desmos for wave interference
- Practical investigations using PheTs and other applets including extracting data
- Key science skills assessed using youtube experiments and applets

# Youtube Demonstrations

- Longitudinal wave machine
- Transverse wave machine
- Bell Jar Experiment
- Wave Speed Demonstration
- Standing Wave Demonstration
- Speaker Interference
- Bridge falling: resonance
- Wine glass instruments

**Predict, Observe, Explain Model**

**Write an aim, hypothesis, method, risks, results, discussion and conclusion**

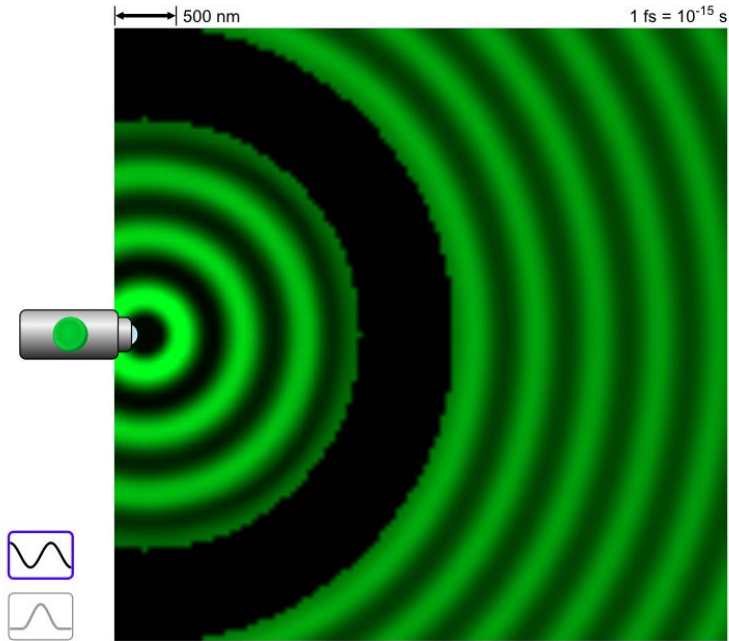


# Clickview

- Applications of wave interference
- Experiment to determine resonance
- Sound wave and other demonstrations



# PheT Wave Introduction



0.00%

Frequency

Amplitude

0 max

Graph

Screen

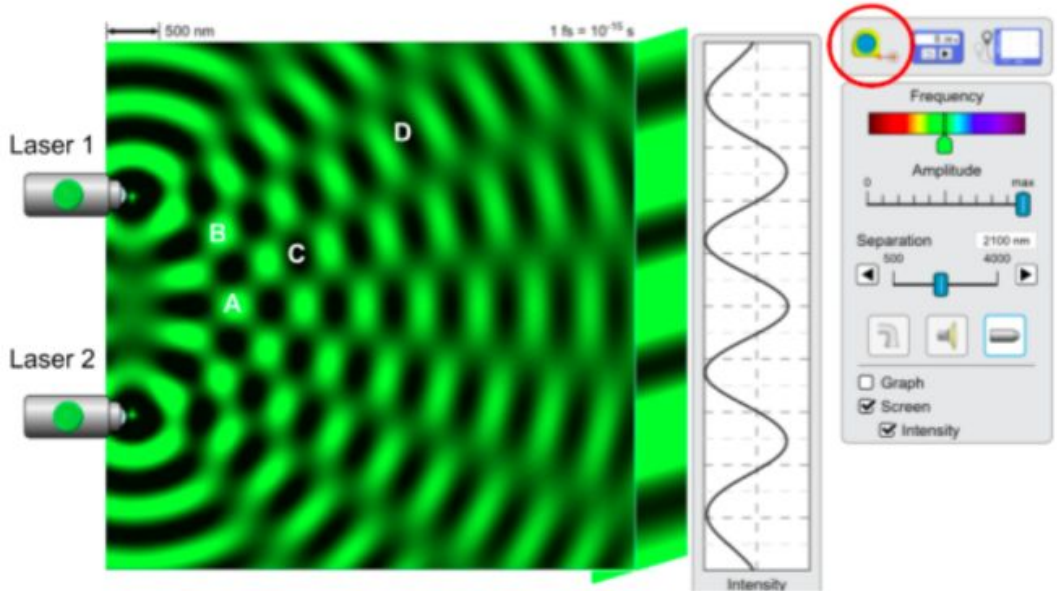
The control panel is located on the right side of the simulation. It features a top row with a yellow circular arrow icon, a blue play button icon with '0.00%' next to it, and a blue graph icon. Below this is a 'Frequency' slider with a rainbow-colored bar and a green vertical marker. Underneath is an 'Amplitude' slider with a blue vertical marker. At the bottom are two checkboxes: 'Graph' and 'Screen', both currently unchecked.

- Top View
- Side View
- Normal
- Slow





# PheT: Wave Interference



Take screenshots and annotate diagram of the applet for students to duplicate and perform precise measurements



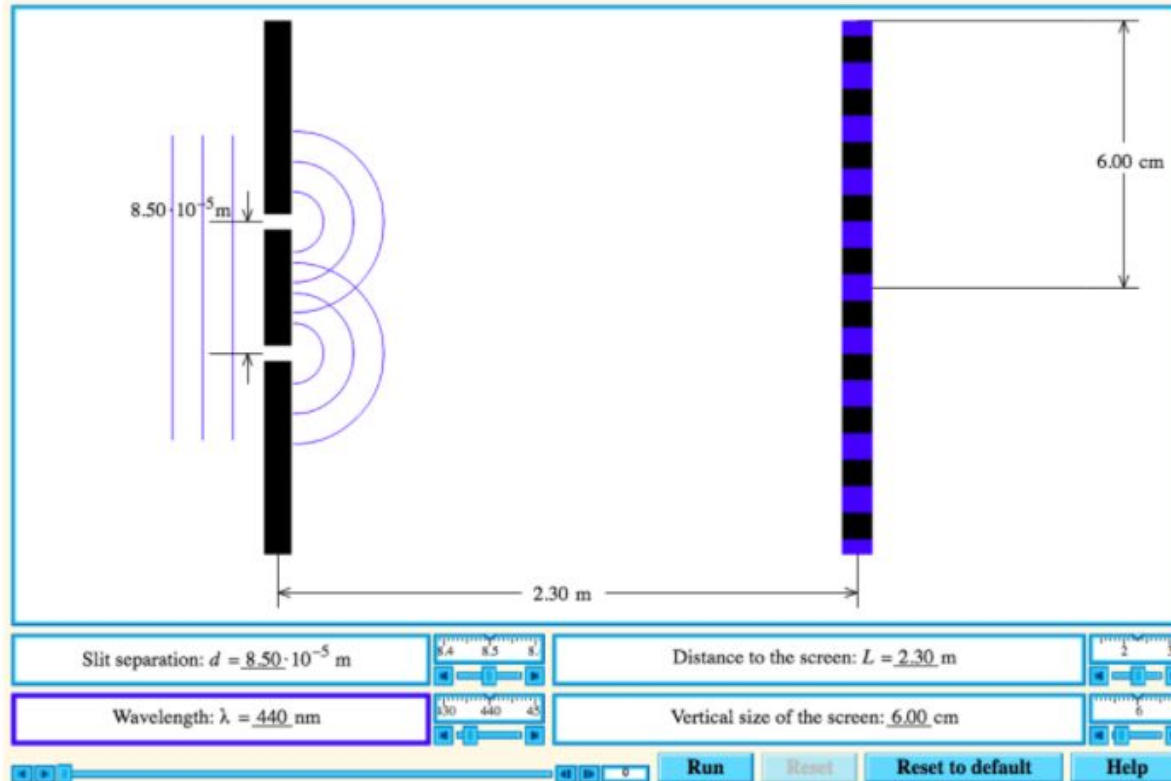
[+ Question 6](#) [Edit](#) [More](#)

Use the circled measuring tool to complete the following table

Point	Distance from laser 1	Distance from laser 2	Path difference (laser 2 - laser 1)
A			
B			
C			
D			

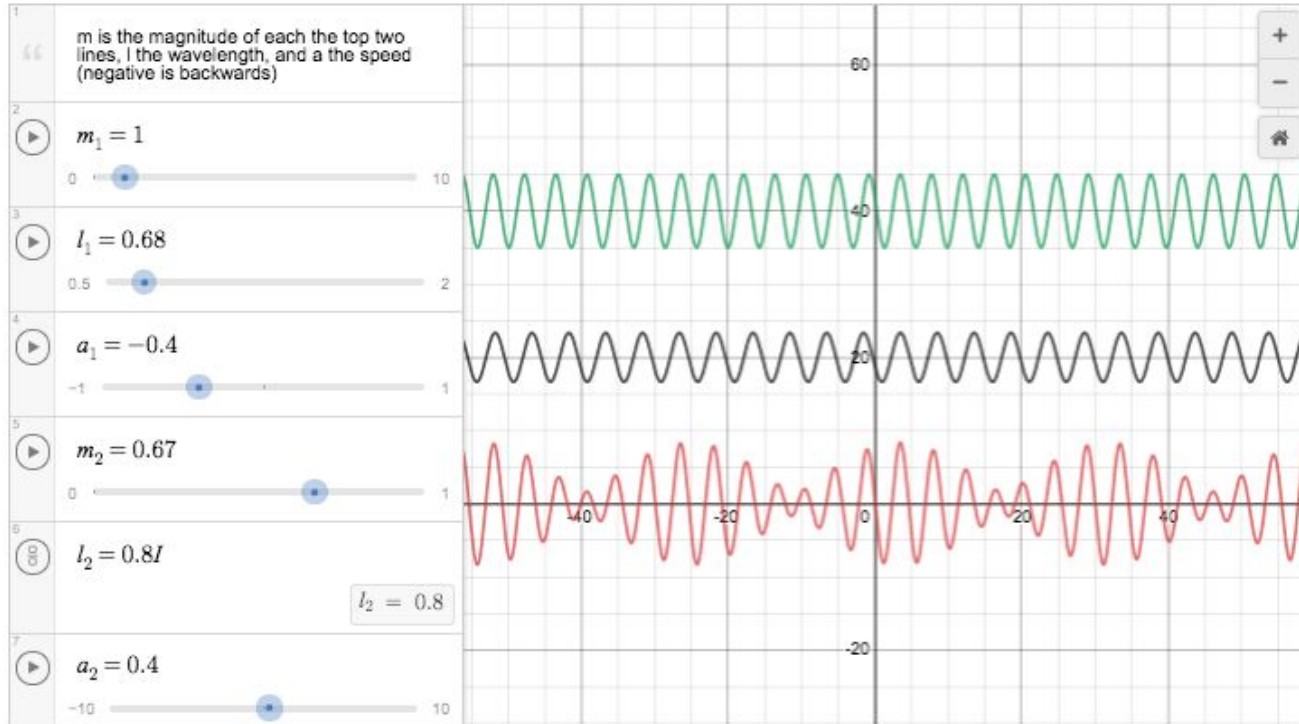


# Young's Double Slit Simulation



[http://tutor-homework.com/Physics\\_Help/double\\_slit\\_experiment.html](http://tutor-homework.com/Physics_Help/double_slit_experiment.html)

# Demos Superposition



# Researching practical applications

- How is reflection used in safety designs? What implications does this have for road safety?
- How is diffusion used in stealth technologies? How does the military use these technologies?
- How are coloured filters used in black and white photography?
- What are the biological mechanisms for detecting light (vision)? How does light detection vary between species?