

OCR (A) Physics A-level

PAG 06.2 - Experiments with Light

Practical Flashcards

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What is refraction?



What is refraction?

Refraction is the changing of speed of a wave as it passes into a new medium of a different optical density.



What quantity doesn't change when light undergoes refraction?



What quantity doesn't change when light undergoes refraction?

Frequency remains constant when a wave undergoes refraction.



What happens when light enters a more optically dense medium?



What happens when light enters a more optically dense medium?

Refraction will occur. The light will slow down, the wavelength will decrease and the light will bend towards the normal.



Suggest a suitable light source to investigate refraction through a glass block.



Suggest a suitable light source to investigate refraction through a glass block.

A ray box can be used to produce a thin beam of light suitable for investigating refraction. This has a lower risk than a laser.



What is the risk of using a laser to investigate refraction through a glass-block?



What is the risk of using a laser to investigate refraction through a glass-block?

The glass-block may reflect some of the light and this could enter your eye and cause damage.



How can the angle of refraction be measured in this experiment?



How can the angle of refraction be measured in this experiment?

Draw around the glass block. Mark the ray entering and leaving the block and then remove the block. Connect the two lines with a straight line and measure the angle that this line makes with the normal.



Describe the path of the light when it enters the glass block along the normal.



Describe the path of the light when it enters the glass block along the normal.

If the light enters along the normal, the light will continue travelling in a straight line through the block.



How can the refractive index be obtained from a graph of $\sin(i)$ against $\sin(r)$?



How can the refractive index be obtained from a graph of $\sin(i)$ against $\sin(r)$?

$$n = \sin(i)/\sin(r)$$

This means that the refractive index is equal to the gradient of the graph.



What is the critical angle?



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The critical angle is the angle of incidence for which the angle of refraction is 90° .



What occurs beyond the critical angle?



What occurs beyond the critical angle?

When the angle of incidence exceeds the critical angle the light will undergo total internal reflection.



How can the refractive index of the glass block be determined from the critical angle?



How can the refractive index of the glass block be determined from the critical angle?

$$n = 1/\sin(c)$$



What safety precautions should be taken when using a ray box?



What safety precautions should be taken when using a ray box?

The bulb and surrounding metal parts can become very hot. Allow it to cool after use, avoid touching metal regions and switch it off when it is not being used. Never look directly into the light.

