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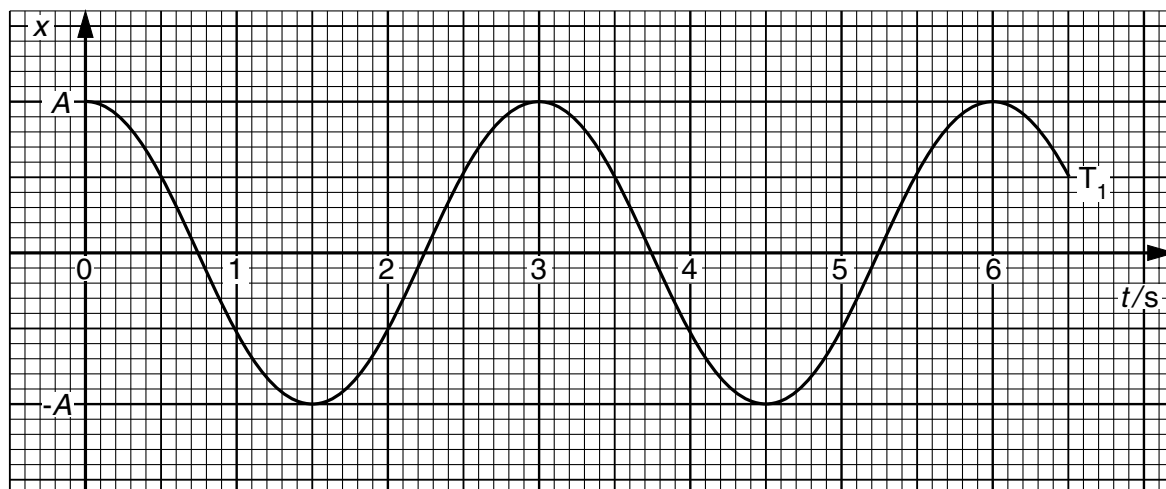


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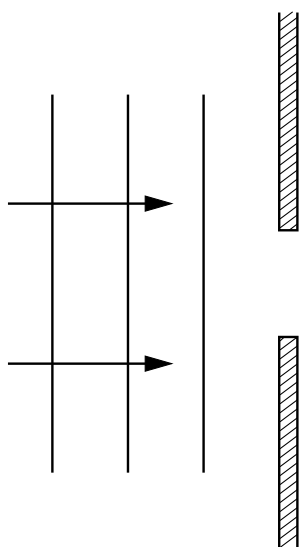
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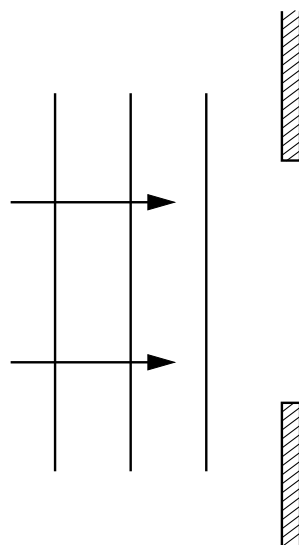
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On Figs. 7.1(a) and (b), draw three successive wavefronts to represent the wave after it has passed through each of the gaps. [5]

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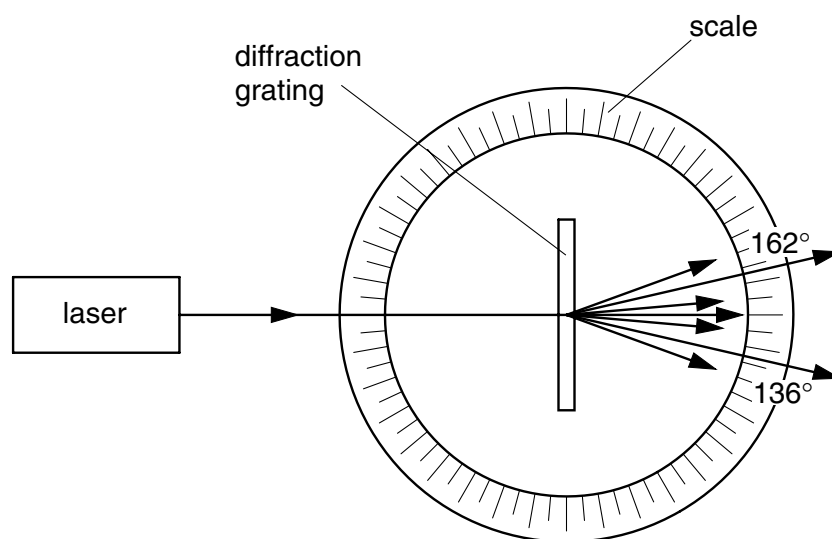


Fig. 7.2

The diffraction grating is situated at the centre of a circular scale, marked in degrees. The readings on the scale for the second order diffracted beams are 136° and 162° .

The wavelength of the laser light is 630 nm.

Calculate the spacing of the slits of the diffraction grating.

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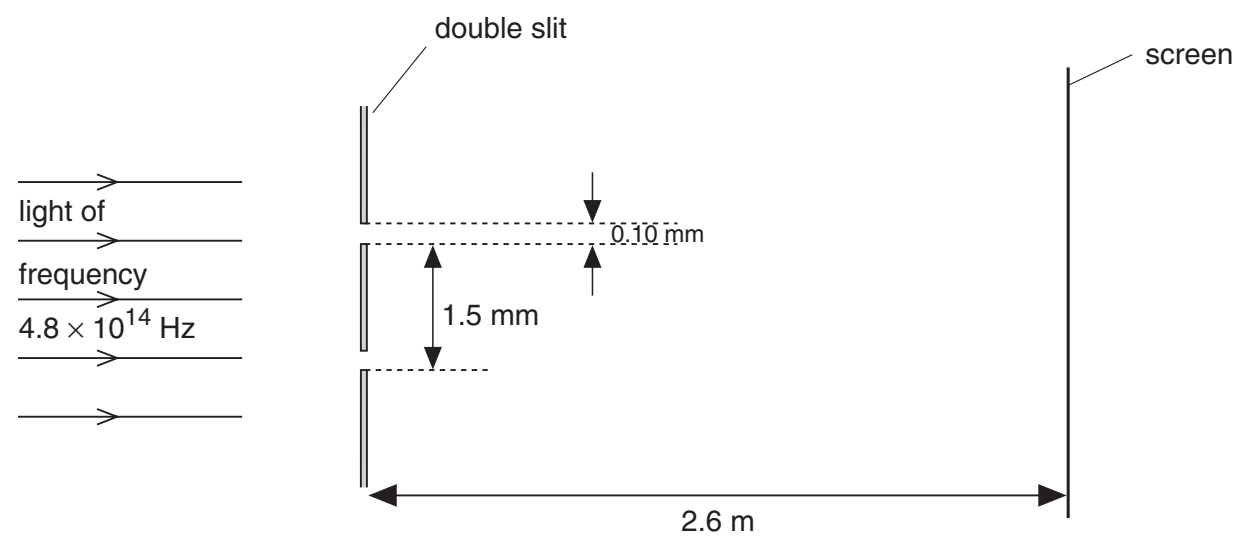


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Each slit of the double slit arrangement is 0.10 mm wide and the slits are separated by 1.5 mm. The pattern of fringes produced is observed on a screen at a distance 2.6 m from the double slit.

(a) (i) Show that the width of each slit is approximately 160 times the wavelength of the incident light.

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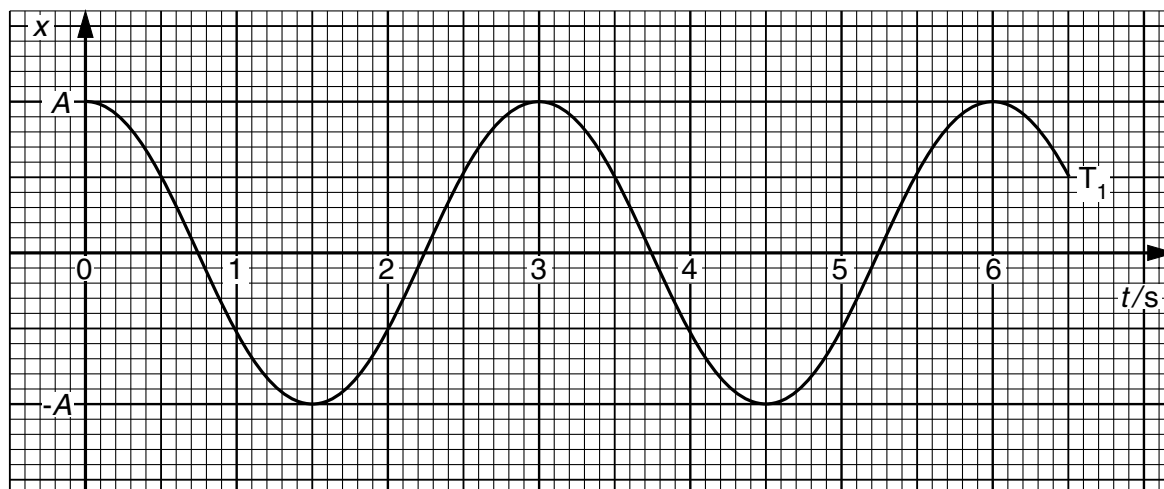


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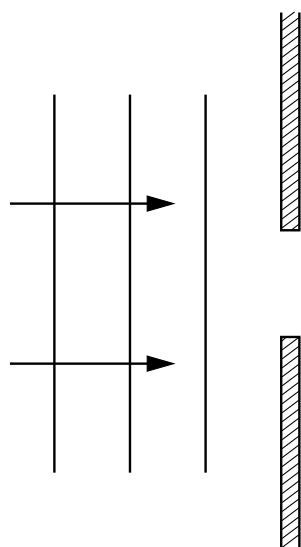
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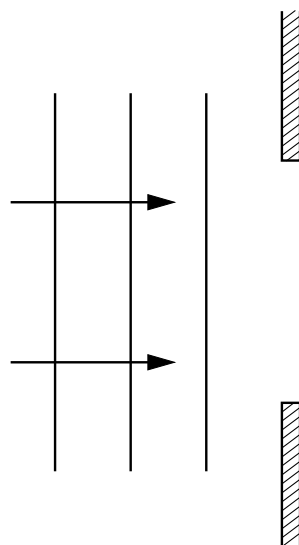
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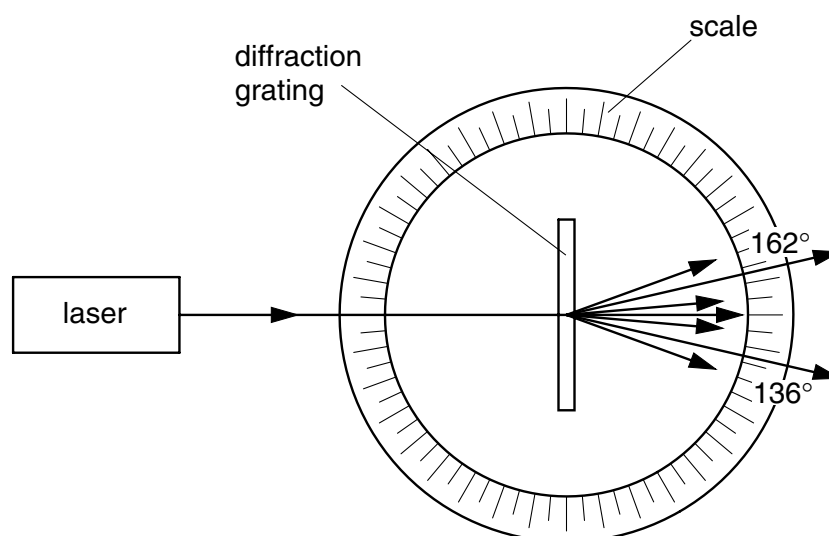


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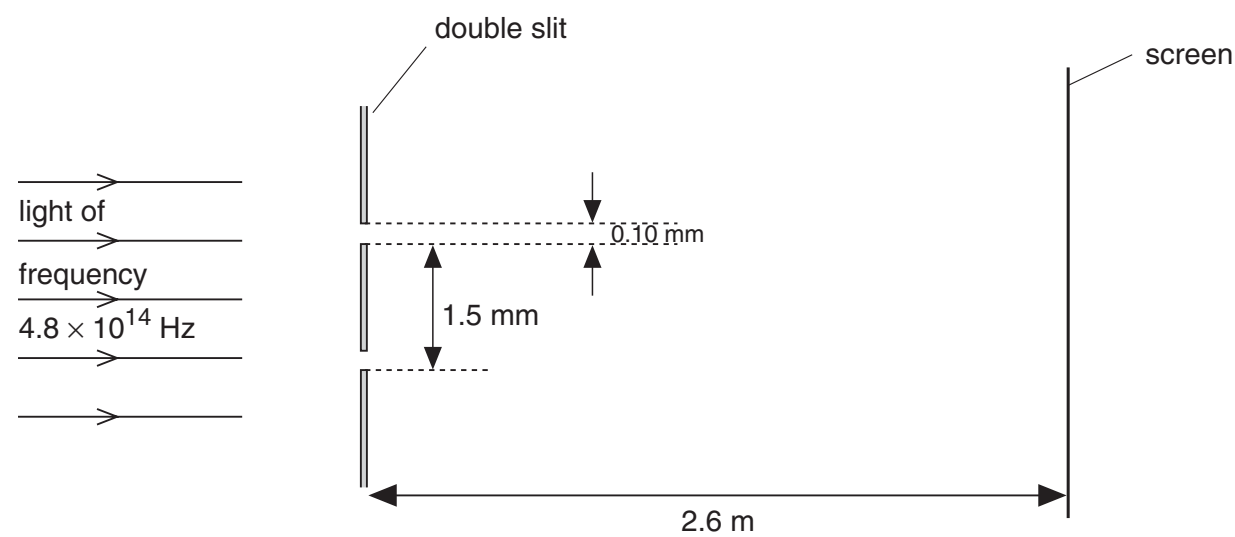


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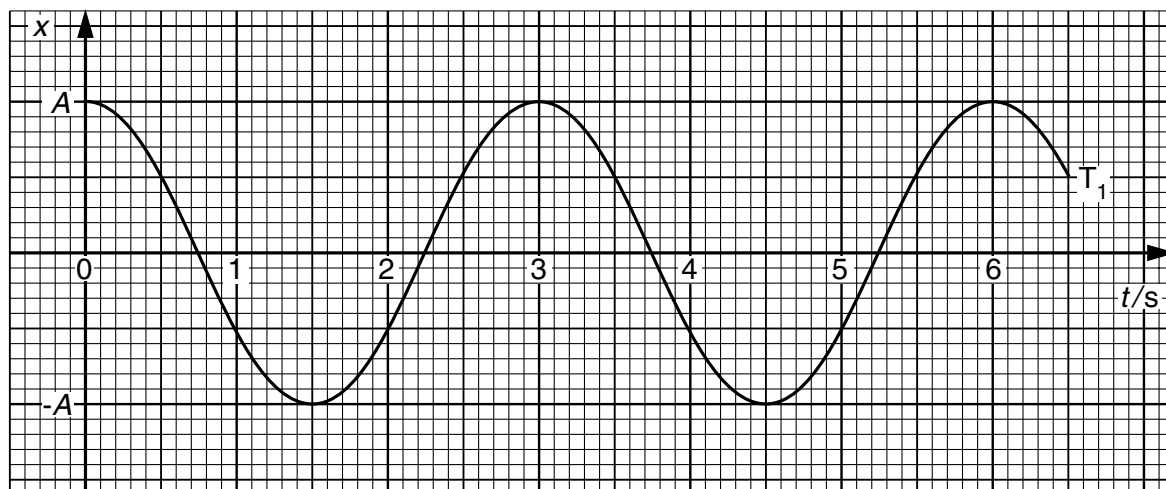


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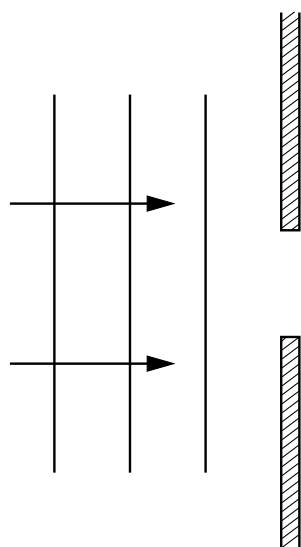
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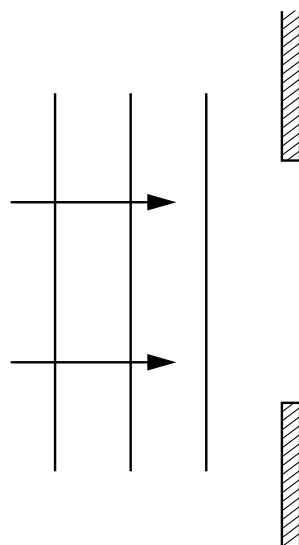
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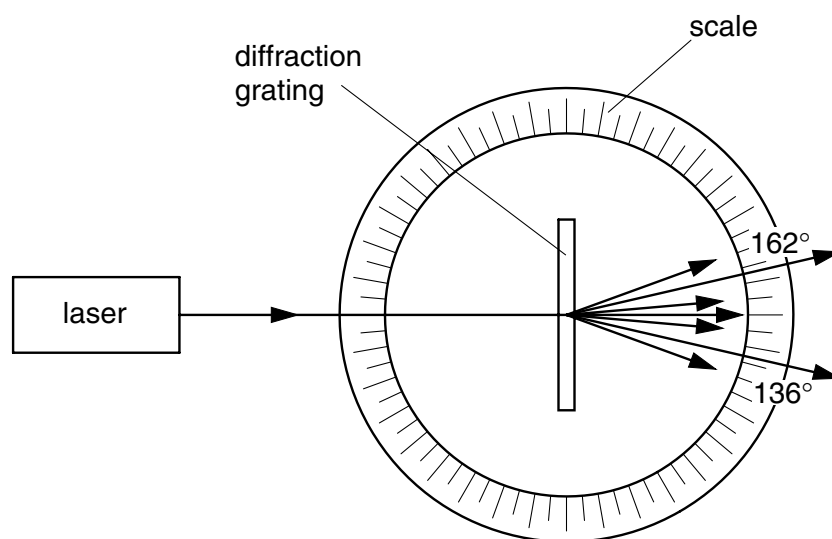


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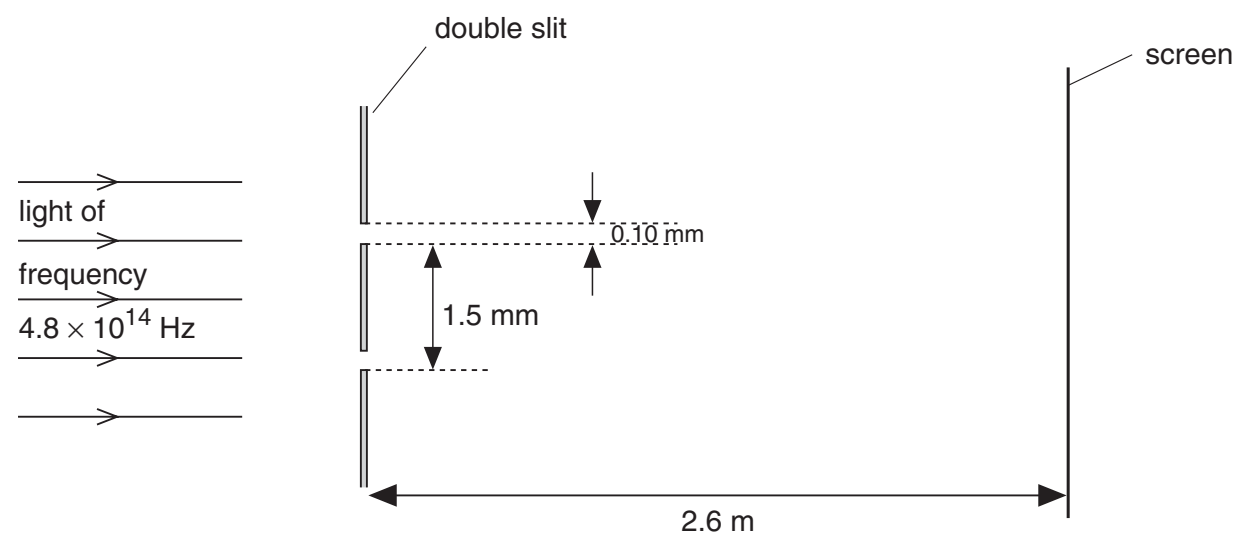


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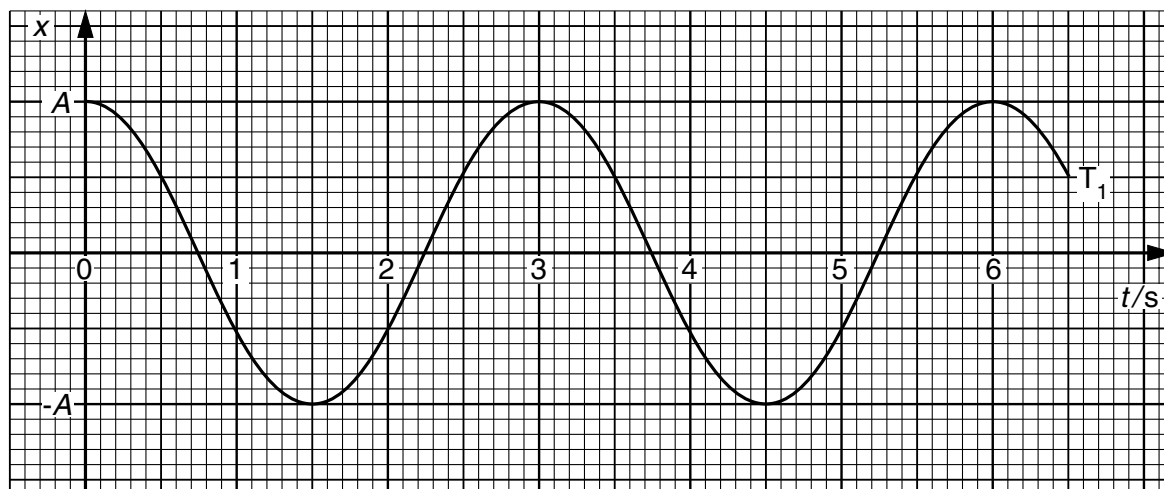


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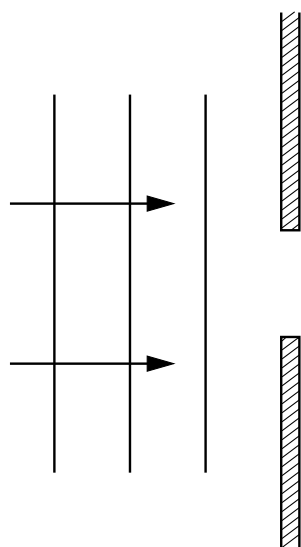
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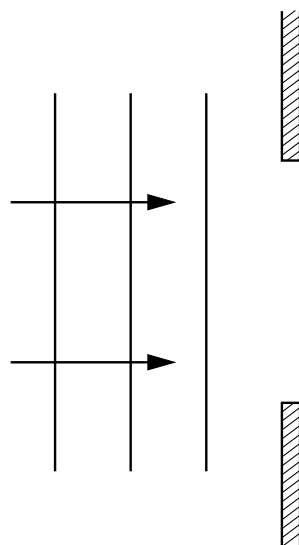
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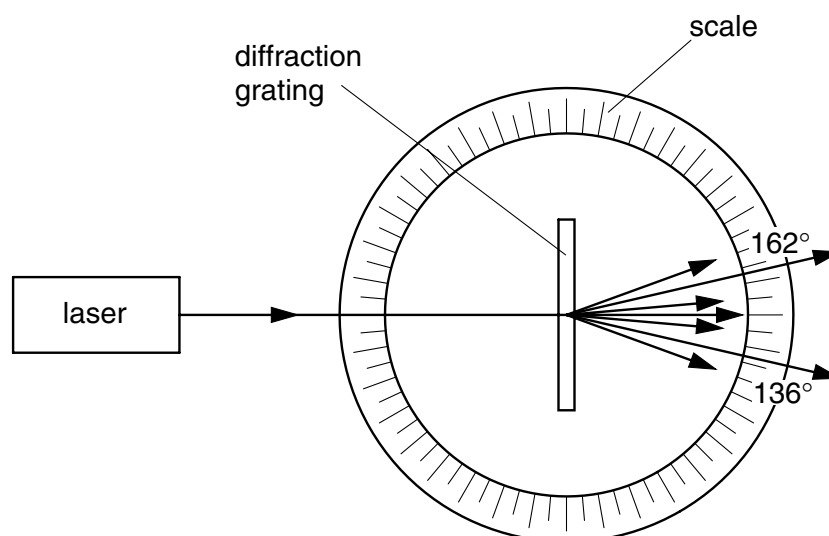


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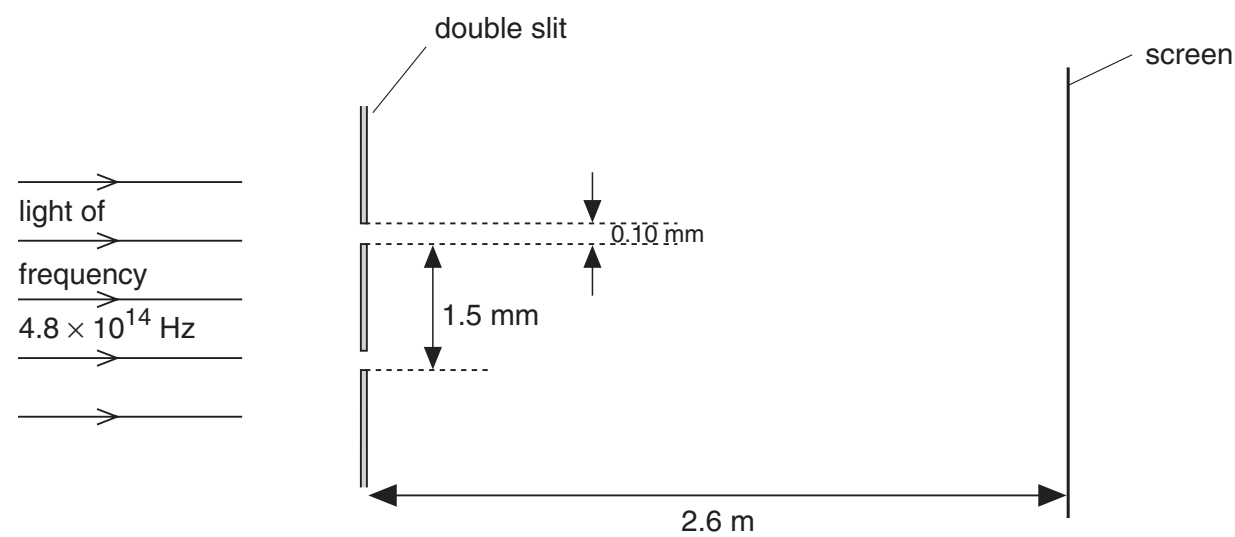


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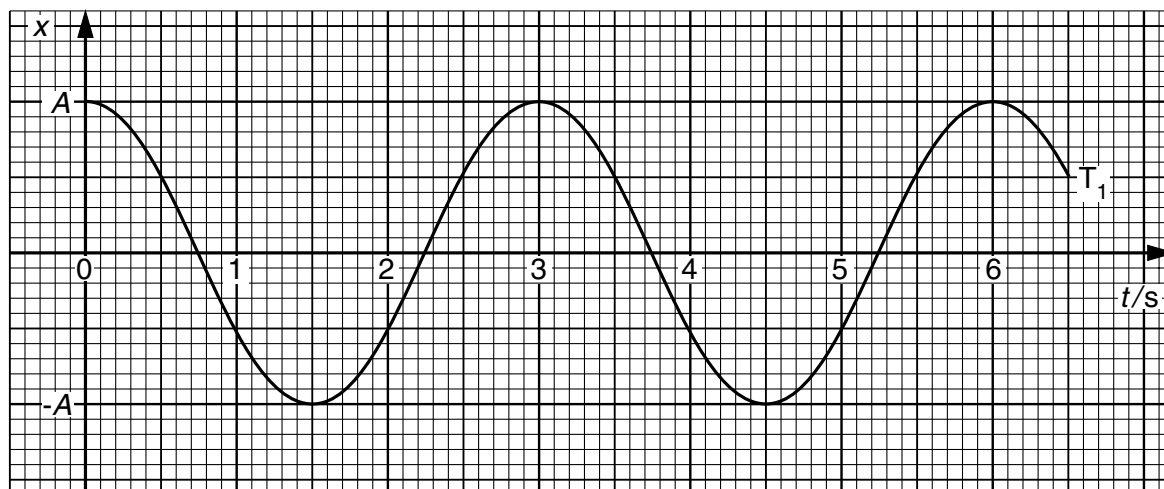


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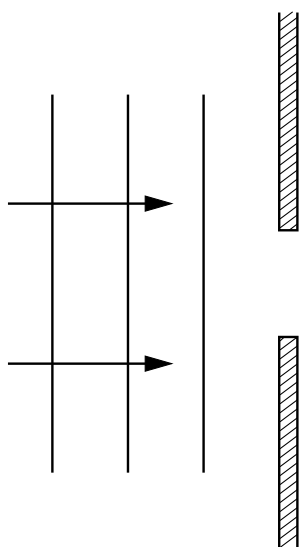
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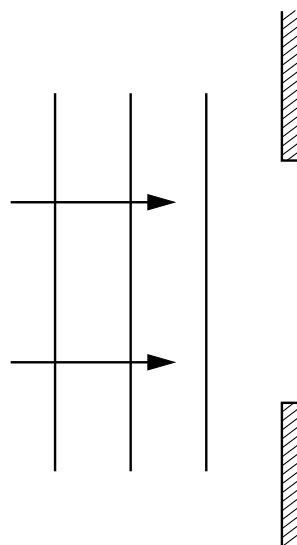
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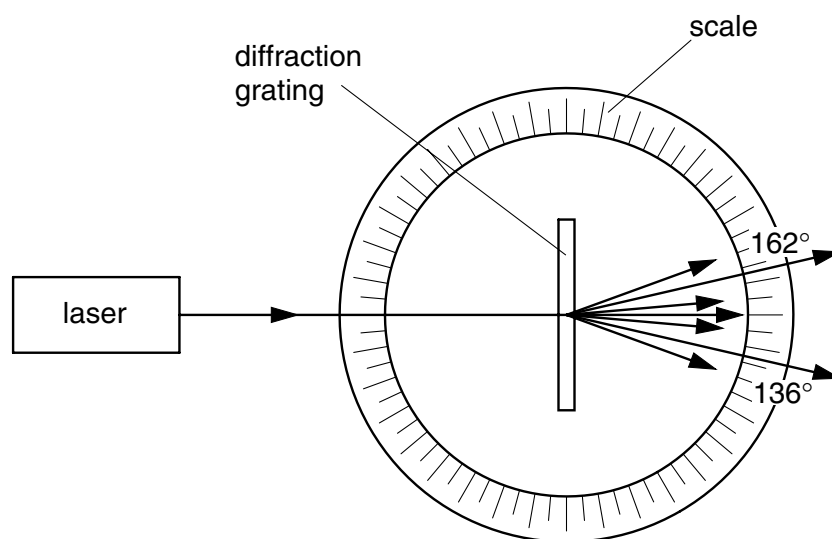


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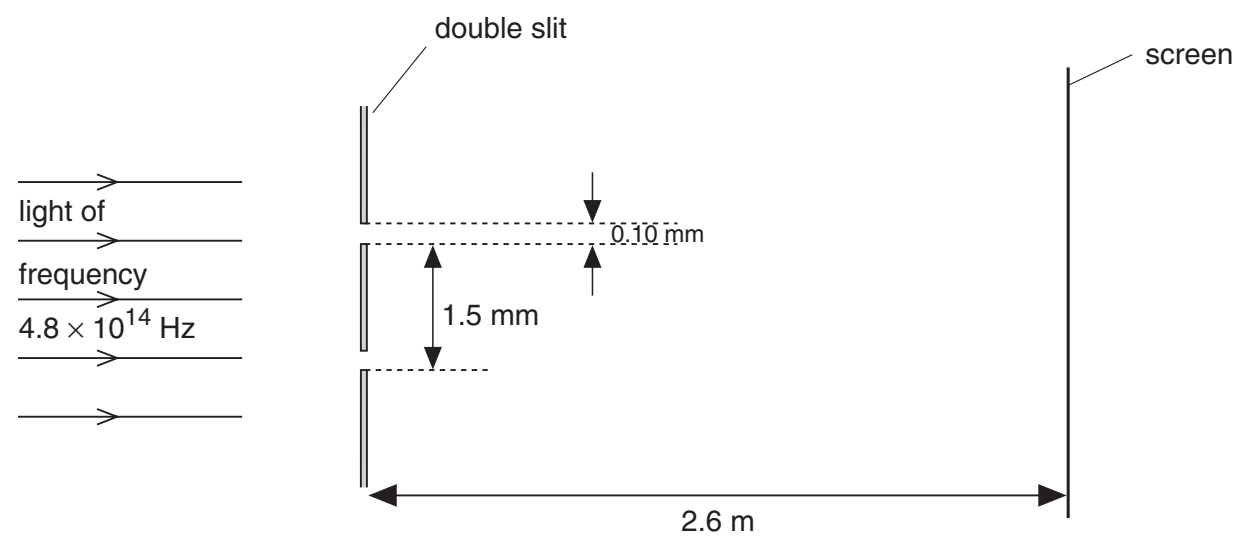


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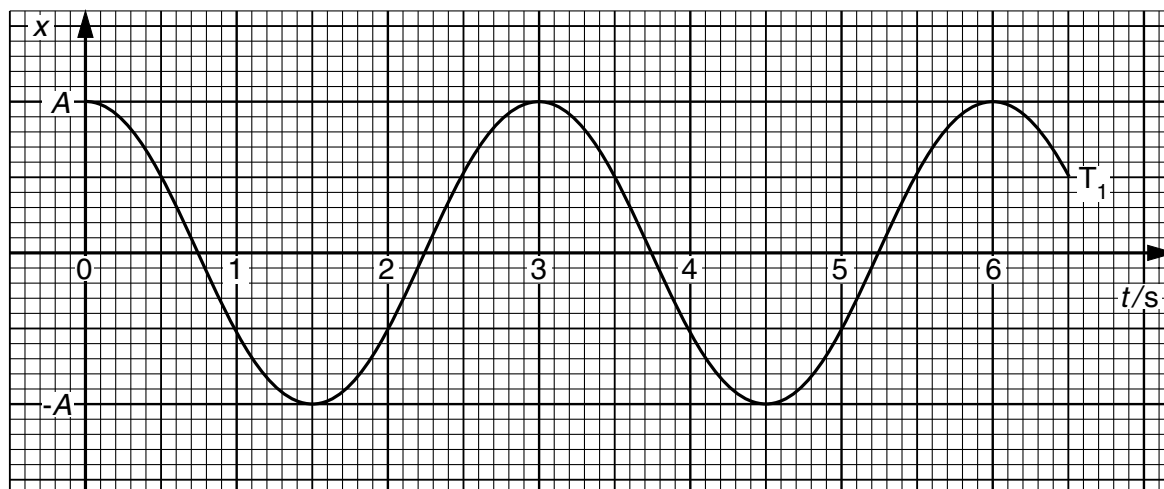


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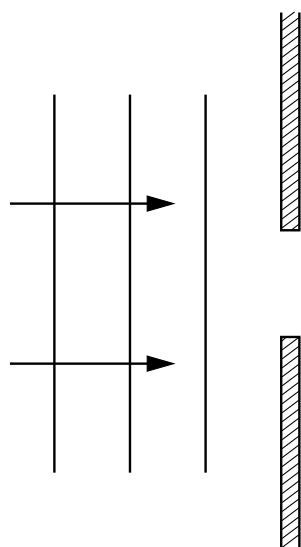
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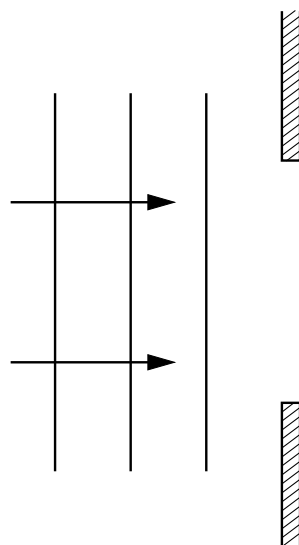
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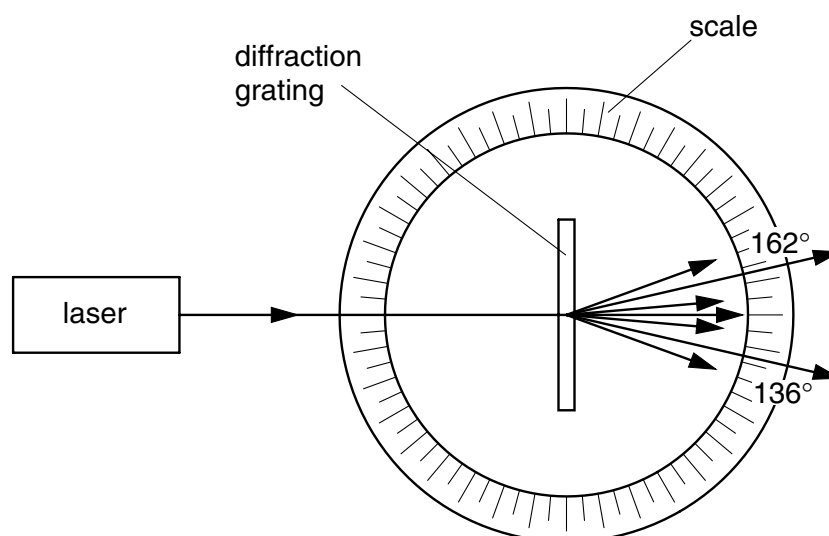


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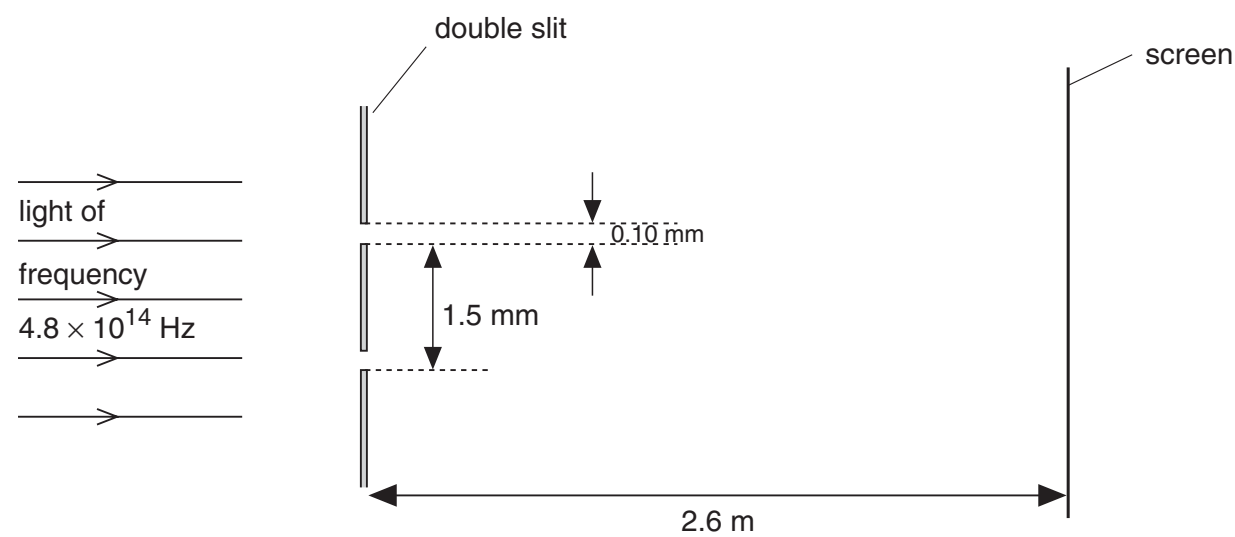


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