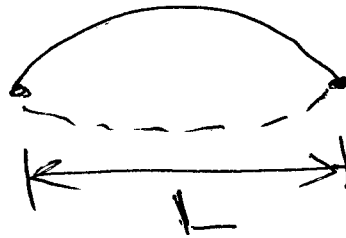


A 50 cm long string with a mass of 0.010 kg is stretched with a tension of 18 N between two fixed supports. What is the resonant frequency of the longest wavelength on this string?

$$\lambda_n = \frac{2L}{n} \text{ where } n = 1, 2, 3, \dots$$

$n = 1$ gives the longest resonant wavelength.

$$\lambda = \frac{2L}{1} = 2(0.50 \text{ m}) = 1.0 \text{ m}$$



$$v = \lambda f = \sqrt{\frac{T}{\mu}}$$

$$\Rightarrow f = \frac{1}{\lambda} \sqrt{\frac{T}{\mu}} = \frac{1}{(1.0 \text{ m})} \sqrt{\frac{(18 \text{ N})}{\left(\frac{0.010 \text{ kg}}{0.50 \text{ m}}\right)}} = 30 \text{ Hz}$$

04 Sep	11 Sep	18 Sep	25 Sep	2 Oct	9 Oct	23 Oct	30 Oct	6 Nov	13 Nov	20 Nov	27 Nov	4 Dec	11 Dec	18 Dec
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