continue to EC-13

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Topic: Principle of Sonometer:-

This principle is also known as laws of vibrating strings/wire. The frequency (f) of the vibrating string depends on the following laws

(1) Laws of length: Frequency is inversely proportional to the length when T & μ are constant. i.e

i.e $f \propto \frac{1}{l}$ ——— (1)

(2) laws of tension – The frequency is directly proportional to the square root of tension, when l & μ are constant.

i.e $f \propto \sqrt{T}$ ——— (2)

(3) laws of mass – Frequency is inversely proportional to the square root of linear mass density, when T & l are constant. e.i $f \propto \frac{1}{\sqrt{\mu}}$

Now combining above laws of sonometer string frequency we get the fundamental frequency formula

$$f = \frac{1}{2l}\sqrt{T/\mu} \quad \text{——— (4)}$$