MELDE'S EXPERIMENT

LAB REPORT FOR ASSIGNMENT NO.1

COLLEGE ROLL NO. : 2020PHY1164

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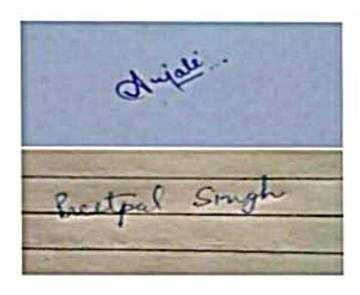
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Aim: To determine.	the frequ	uncy of u	given turi	g fork use	ing Me	lde's
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July 1 Dinner

Apparatus: Electrically maintained tuning fork, power supply, light weight from, weight box; stand with clamp and fulley, analytical Iralance

Theory:

> When a string under Jension is set into vibrations, transverse harmonic

waves hropagate along its length.

7 The speed of wave in stretched string depends on Tension in the string and mass per unit length (linear density) of string.

v = T; v = velocity, T = tension, m = mass fier unit length

 \rightarrow Frequency of wave = n = $1\sqrt{7}$; l= length of loop

21 \sqrt{m}

> The string is set into relevations by means of an electrically mointained.

tuning fork.

→ When other end of string is clamped to rigid support (here, hulley), reflected =

→ The incident and reflected waves will superimpose to produce transverse stationary waves in the string.

7 The string will wilerate in such a way that the clamped points of the string are nodes and anti-nodes exists at the middle. Nodes are the points where displacement is minimum. Anti-nodes are the points where displacement is maximum.

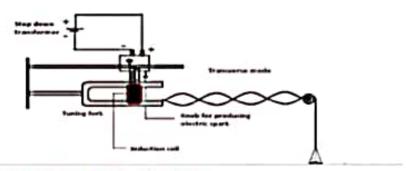
-> As the wave is limited to a certain region, it is a stationary wave.

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Personal Control of the State o	and the state of t	and lules of a	
\$	fork completes one. Hence, in this mode, for is equal to the frequency of string (n):	equency of tunic	g fork (N)
3	N = 1 T k k k k k k k k k	har foot in	A WAY
3	In longitudinal naode, turing fork in set in such	2. W. GAGG [LESS]	. KINTANCAL
3	of str	ing. The string	completer
	half of its wilration when the tuning fork this mode, frequency of tuning fork (N) is equal to the string (n):-	completes one	Hence in
	of the string (n):- 1 [7	Att of the white on	Tarke (iii)
3 Residence of	Procedure:	ws out its	was ME vel
	Paradura	the restaurant is a	x1 1
3	2 To interest Wille Will with the Will it will a	y rexisting the tests	~) (4)
3 i>	Connect the frimary of the step down transforme	r to A.C. mains,	while the
	Connect the frimary of the step down transforme secondary to the given point of electrically ma	rintained funing	fork.
ii)	light one end of thread to bring of tuning for	ik and light se	condend to
	ight one end of thread to prong of tuning for scale from. Hong the scale from with fulley	that is fixed	at end of tale
	pan. Now excite the tuning fork using screen	e so that reiler	nation in
	tuning fork gets started.	7	

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14		Date:	W.
iv)	More the tuning fork toward or away from of thread, so that clearly visible loops ca	n fulley to adju n be formed. No	est Length &
	of thread, so that clearly visible loops ca the complete length of thread and count the loops. Divide whole length by no of loops to g	number of clear	ly visible C
v>	Now increase the mass in fran in 100 gm and		times.
<u></u>	Now arrange tuning fork in longitudinal situation its par. Execite the turning fork, to start	tion and load a n	rass of 100gm e
vii)	Move the tuning fork towards or away from pu so that loops made are clearly visible. Me complete thread when stable loops are formed	lley to adjust her asure the length	gen of thread
	complete thread when stable loops are formed count the number of clearly visible loops. Divi		
	loops to get length of single loop. This length would be double of length in trans	1 - 1 - 1	
viii)	Now increase the mass in fran in 100 gm and ref	reat this (5-6) =	
iχ	Measure the mass of thread and mass of scale fer unit length of thread i.e. (m).	fan. Also calcu	lde mass
7世级产品	Calculate frequency of tuning fork for transvers	of construction of the construction of	
	Precordions:	- house II II was visited	
<u>(a)</u>	The thread should be uniform and inextensible		
(le)_	Well defined loops should be obtained by adj	justing the tension	
(c)-	Frictions in the fulley should be least possi	lde.	
(d)	Longiludinal and transverse arrangements shou	ld be correct.	Ē.

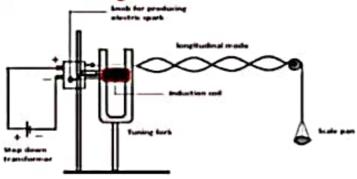
Transverse mode of vibration:

In this arrangement, the vibrations of the prongs of the tuning fork are in the direction perpendicular to the length of the string.



Longitudinal mode of vibration:

In this arrangement, the tuning fork is set in such a manner that the vibrations of the prongs are parallel to the length of the string.



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