

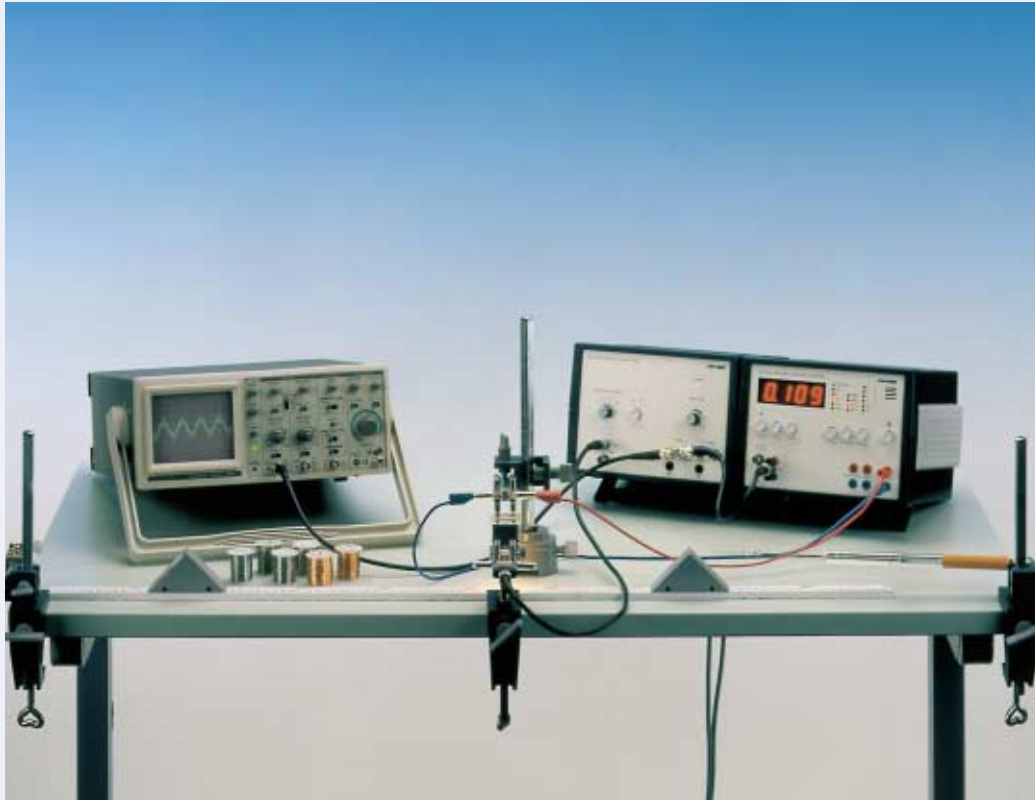
Vibration of strings 1.5.01-00

What you can learn about ...

- Natural vibration
- Mass-spring system
- Harmonic sound intervals

Principle:

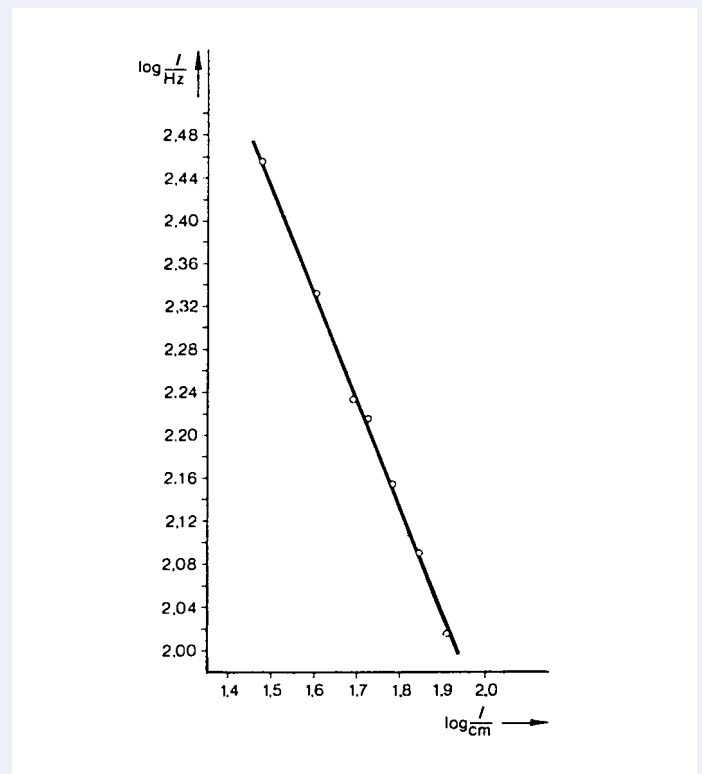
A tensioned metal string is made to vibrate. The vibrations of the string are optically scanned, the vibration process observed on the oscilloscope and the dependence of the frequency on the string tension and string length and the density of the material are investigated.



What you need:

String tensioning device, w. stem	03431.01	1
Nickel wire, $d = 0.3 \text{ mm}$, $l = 100 \text{ m}$	06090.00	1
Kanthal wire, $d = 0.3 \text{ mm}$, $l = 100 \text{ m}$	06092.00	1
Constantan wire, $d = 0.3 \text{ mm}$, $l = 100 \text{ m}$	06101.00	1
Constantan wire, $d = 0.4 \text{ mm}$, $l = 50 \text{ m}$	06102.00	1
Copper wire, $d = 0.4 \text{ mm}$, $l = 50 \text{ m}$	06106.02	1
Copper wire, $d = 0.5 \text{ mm}$, $l = 50 \text{ m}$	06106.03	1
Barrel base -PASS-	02006.55	1
Bench clamp -PASS-	02010.00	3
Support rod -PASS-, square, $l = 250 \text{ mm}$	02025.55	3
Right angle clamp -PASS-	02040.55	3
Rod with hook	02051.00	1
Sign holder	02066.00	2
Fish line, $l = 100 \text{ m}$	02090.00	1
Meter scale, demo, $l = 1000 \text{ mm}$	03001.00	1
Spring balance 100 N	03060.04	1
Striking hammer, rubber	03429.00	1
Photoelement f. opt. base plt.	08734.00	1
Lampholder E10, housing g1	17049.00	1
Lamp bulb 6 V/3 W, E10, 10 pcs	35673.03	1
Distributor	06024.00	1
Oscilloscope, 30 MHz, 2 channels	11459.95	1
LF amplifier, 220 V	13625.93	1
Digital counter, 4 decades	13600.93	1
Plug with push-on sleeve	07542.04	1
Adapter, BNC socket - 4 mm plug	07542.20	1
Adapter, BNC-plug/socket 4 mm	07542.26	2
Connector, T type, BNC	07542.21	1
Adapter, BNC-socket/4 mm plug pair	07542.27	1
Screened cable, BNC, $l = 750 \text{ mm}$	07542.11	1
Screened cable, BNC, $l = 300 \text{ mm}$	07542.10	1
Connecting cord, $l = 750 \text{ mm}$, red	07362.01	1
Connecting cord, $l = 750 \text{ mm}$, blue	07362.04	1

Complete Equipment Set, Manual on CD-ROM included
 Vibrations of strings P2150100



Fundamental frequency f as a function of string length l at a given tensioning force $F = 30 \text{ N}$.

Tasks:

1. To measure the frequency of a string (e.g. constantan, 0.4 mm dia.) as a function of the tensioning force and the length of the string.
2. To measure the frequency for various types and cross-sections of string, at a fixed tension and string length.