

The Second experiment

Study of self-inductance and inductive potential in alternating current circuits

The goal of the experiment

Finding the inductive will not have an alternating voltage source winding

Roads

Low voltage AC voltage source negligible

primary resistance inductor **Resistors box**

ammeter for alternating current

Experience theory

The output voltage of the voltage (V) and current (I) in the container circuit is the resistance to change in the voltage of the container circuit.

$$X_L = \frac{V_L}{I_L}$$

The inductive will is calculated from the following relations:-

from ohm's law

Where W is the angular frequency and its unit is rad

L: coefficient of self-inductance of the inductor and its unit Henry (H)

F: Voltage frequency or frequency, frequency, Hz.

$$X_L = \omega L$$

Therefore, the inductive will can be found.

What does the induction reaction depend on:

The coefficient of self-induction of the inductor is directly proportional to it with the nucleus frequency constant, that is: $X_L \propto L$

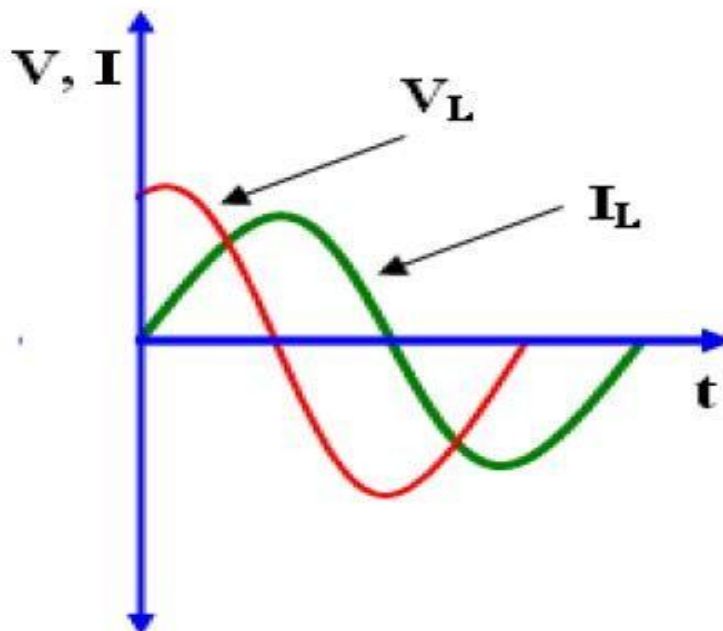
The angular frequency is ω and is proportional to that of the inductance constant, i.e., $X_L \propto \omega$

It can be shown that inductive reactance is measured by Blum

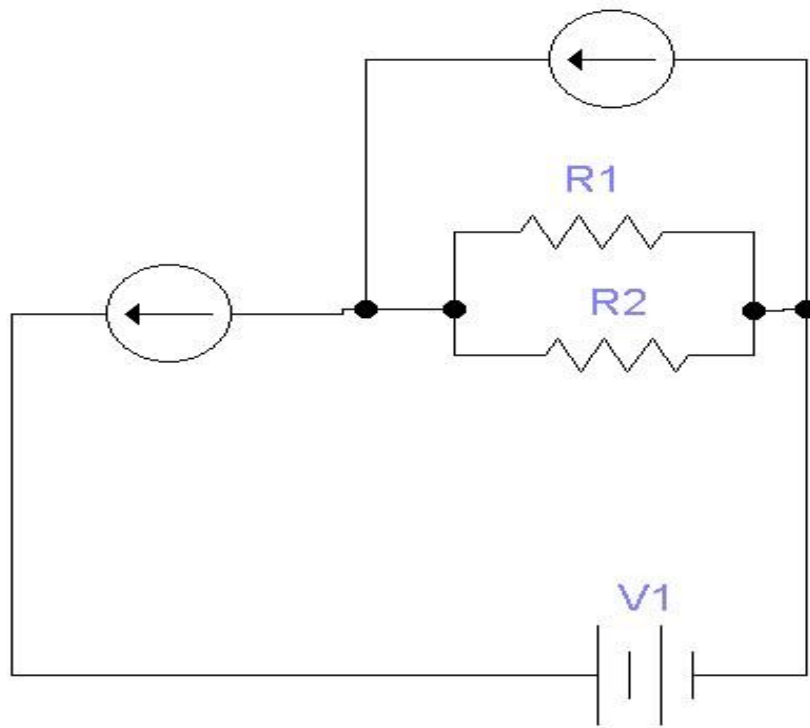
$$X_L = 2\pi fL$$

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We note here the description of the relationship between the voltage and the current containing a pure inductor, which explains why the impedance of the coil is generated in the case of alternating current.



The method of work: -



We connect the electrical circuit as shown in the figure:-

*We start the voltage of the alternating source and record the value of the current passing through the ammeter and the value of the novelty difference on both ends of the coil using the voltmeter and insert the numbers in the table.

*Align the x axis and then calculate the value of the inductive will from the intrinsic equations.

*We find the theoretical value of the inductive regression and compare it with the original value and calculate the error rate:

$$X_m - x \setminus x * 100.$$

*We apply a sinusoidal voltage to a purely inductive inductor (that is, the basic resistance is zero).

*An electromotive force is generated.

*The AC source voltage is kept at a certain value throughout the experiment.

*The resistance achieved is 1 for each rate, recorded from its record of ammeters.

*Write your readings in the table.

* graphic graphs in the theoretical table.

* Record the frequency value in the source and then the value of the self-induction coefficient.

The graph in voltages, the projected number, changes as it represents the maximum value of the voltage, the large number of voltages. Electrical energy and household and industrial operations by alternating current, alternating current, alternating current, electric current, electric current, alternative energy as needed by electrical transformers and represents the driving force (N) from the number of turns and turns in a uniform magnetic field and quickly..

So does the case, and this constant current is connected to the current state.

Questions: -

1- Why is Hittite reaction not considered Ohmic resistance and does not obey Joule's law?

2- Why does the pure inductor not waste power in AC circuits?

2- Why is induction not generated in the case of direct current, as opposed to alternating current?

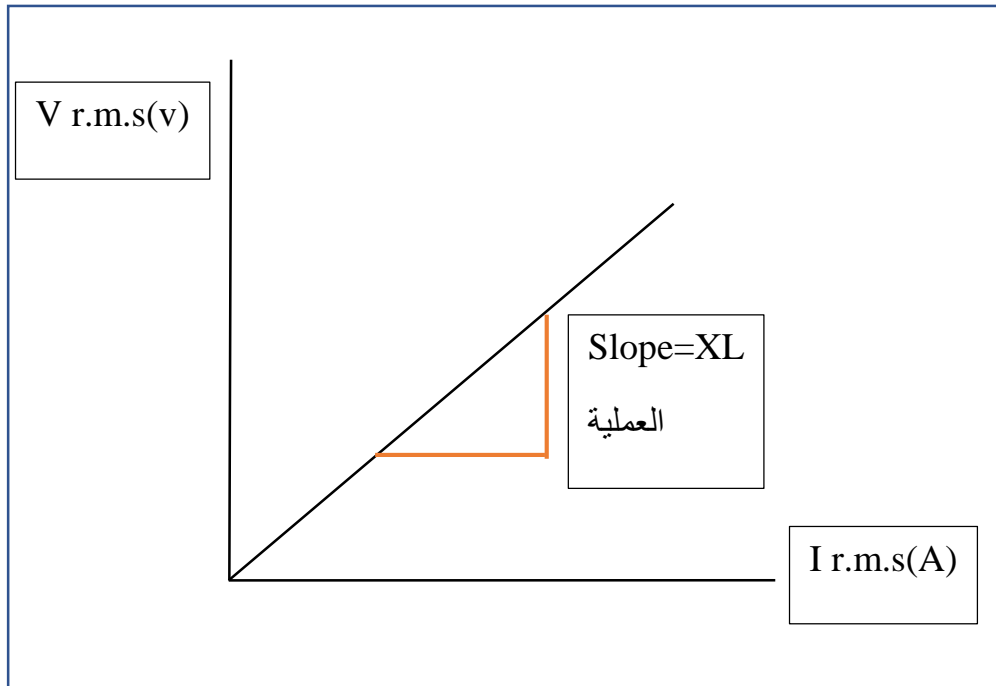
3- It is preferable to use alternating current in electrical circuits 4-

Explain the visas in the Avometer.

5- Why is the resistance of a voltmeter higher than an ammeter?

F=50 Hz, L=2mH

V(v)	I(A)	(V/1.41) r.m.s	(I/1.41) r.m.s
0	0	0	0
0.5	0.59		
1	1.09		
1.5	1.6		
2	1.92		
2.5	2.4		
3	2.86		
3.5	3.2		
4	3.7		
4.5	4.2		



$XL=2\pi fL$ قيمة الرادة الحثية النظرية

$L=\frac{XL}{2\pi f}$ قيمة الحث الذاتي العملية

$L=2\text{mH}$ قيمة الحث الذاتي النظرية