Is superconductance restricted to an extremely low temperature? Or can it be effectively replicated using some other technique? [closed]

Ask Question

Asked 11 months ago Modified 11 months ago Viewed 123 times

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A type of electrical amplifier is proposed in which only magnetism and it's analogous current exists for the most part. There is no voltage and no wattage (to speak of) in which electricity has to noticeably exhibit Ohms Law. Once connections are made to an outside appliance, voltage appears, because none of the junctions in and around the load are shorted with each other nor with ground. But all of the nodes of the power supply section of the circuit are shorted with each other. So there are only two nodes in the power supply, the ground node on one terminal of the sine wave generator and the common node among all of the inductors on the other terminal of the sine wave generator.

Self shorting all of the nodes (in common with each other) eliminates the effectiveness of utilizing any diodes, capacitors, or spark gaps. Only inductors have any relevance in this type of circuit.

Since there is no electrical throughput except through the sine wave generator, mutual inductance has to be precisely tuned. And self inductance also has to be structured a certain way as shown below…

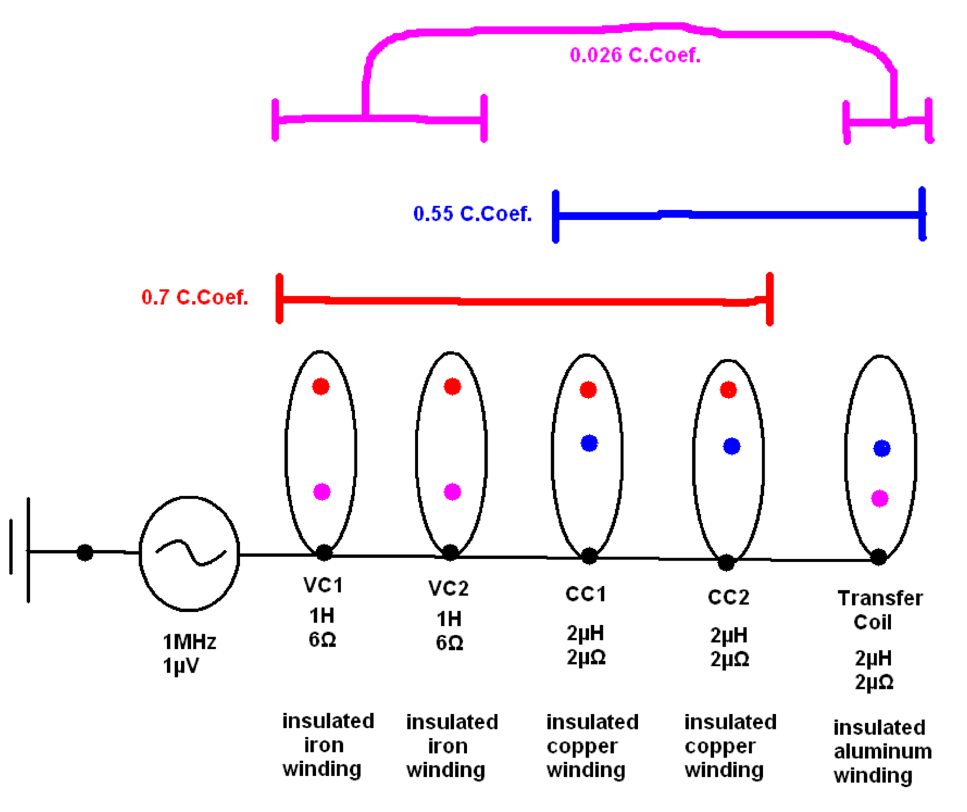
Given a pair of coils (#1), and another pair of coils (#2), and a single coil (#3), and the following magnetic couplings among them:

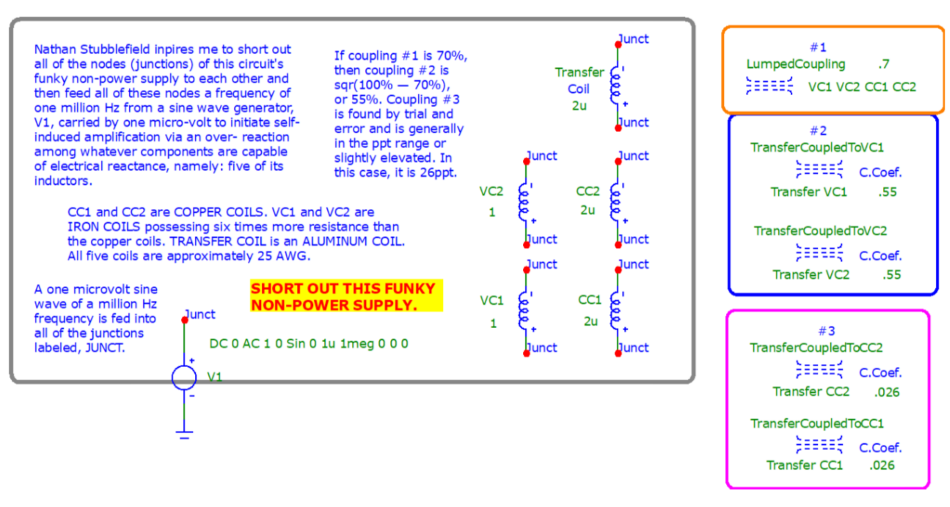
- Coupling #1 is between coils #1 and coils #2.
- Coupling #2 is between coils #1 and coil #3.
- Coupling #3 is between coils #2 and coil #3.
- Coupling #1 is greater than or equal to the golden ratio of 0.618… (e.g. 0.99).
- Coupling #2 is precisely the square root of the difference between unity and coupling #1: $\sqrt{(1-0.99)} = \sqrt{(0.01)} = 0.1$, or 10%
- Coupling #3 is precisely the cube of the difference between unity and coupling #1... ie, (1 - 0.99)^3 = (0.01)^3 = 0.000001, or 0.0001%.

What are the chances of effectively replicating super conductance (without altering temperature) by shorting out all of the nodes among all of these five coils and connect this common node to the output of a sine wave generator operating at 1 μV and a frequency of 1 MHz?

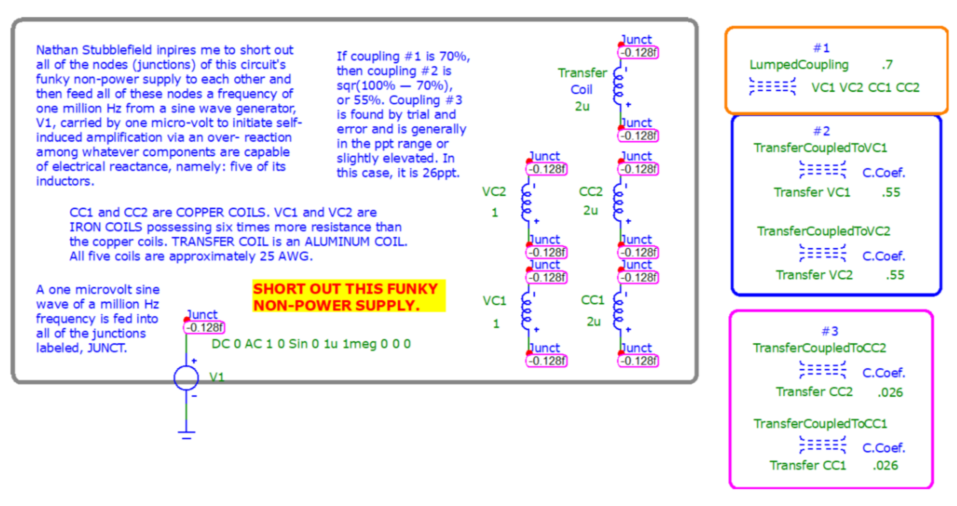
I am assuming that the simulator environment (of a Micro-Cap circuit from Spectrum-Soft) is both theoretical and logical to assume that anything is possible within that environment and limited to that environment with no guarantees outside of that environment making it highly theoretical - not necessarily probable, nor possible - in the concrete world, but only guaranteed in the world of the abstract mathematics involved.

In the physical world, it's conjectural to assume it's probability if coils #1 are made of iron, coils #2 are made of copper, and coil #3 is made of aluminum?

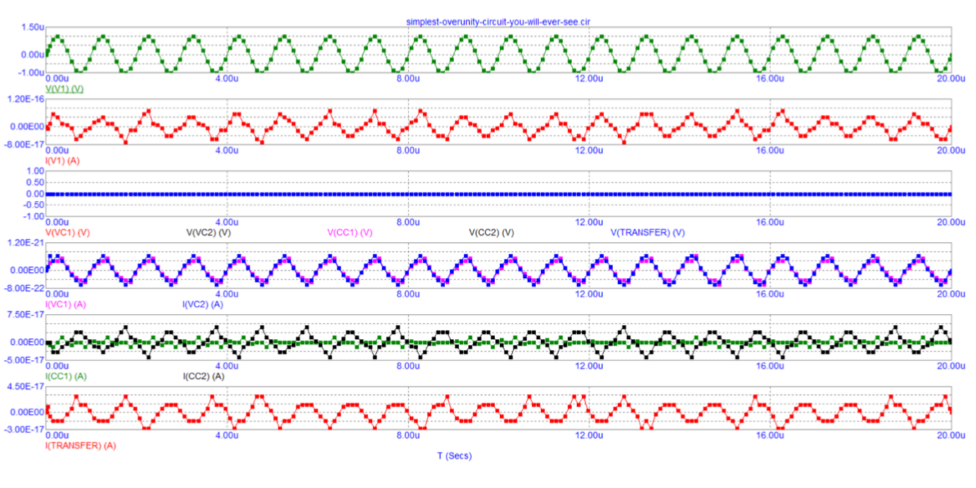




It's nodal voltages are…



…versus its initial twenty micro-seconds…



Ten milli seconds…

And lastly, 120 milli seconds (my computer couldn't allow anything longer without problems)…

Since resistance merely governs voltage drop, any impedance of high resistance will foster our habitual tendency to solve a problem by increasing the voltage. This is known as the Ferranti Effect. On the other hand, a purely reactant impedance can, actually, overcome resistance and begin to exhibit characteristics analogous to superconductivity if the frequency of reactance is high enough to overcome resistance per unit time. Raising the frequency of a sine wave generator does not "cost" more energy. Nor does it defy physics' conservation of energy. Yet, in this case, amplification of current occurs while voltage retains a zero status within the body of each inductor.

It is not the conservation of energy which is being defied, here. Instead, it is Michael Faraday's Law of Induction which is given a restraint, a limitation, of jurisdiction. For, it is not always necessary to move a coil through a magnetic field in order to manifest current inside of that coil. Purely reactive impedance, devoid of resistive impedance, is a satisfactory replacement.

Frequency over time is equivalent to motion through space. Magnetic flux, or it's analog, is rotating in both examples.

The amplitude of a voltage source is not the only option available for supplying an energy input. The frequency of a low voltage source is another, because frequency is a potential form of energy. This is why the conservation of energy has not been defied, because conservation includes both kinetic and potential forms of energy. And Michael Faraday's Law of Induction has simply been expanded to include a more pervasive definition.

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edited Jan 6 at 17:34

asked Jan 5 at 16:19
Vinyasi
1 ●6

Comments are not for extended discussion; this conversation has been moved to chat. – Buzz ♦ Jan 6 at 3:37

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1 Answer

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2

There are high temperature superconductors but under extreme pressures A superconducting state was achieved at $T = 25$ C with an alloy.

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edited Jan 6 at 3:38
Buzz ♦
13.2k ●14 ●36 ●52

answered Jan 5 at 17:16
Jun Seo-He
1

1 "A superconducting state was achieved at T=25C with an alloy." A reference would be helpful. – my2cts Jan 6 at 11:49

Superconductivity at temperature 15 C and pressure 267 GPa, in *Nature*, 2020. – rob ♦ Jan 6 at 20:53

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