Acta Scientific Applied Physics

Volume 2 Issue 12 December 2022

Review Article

An Example of Superconductor, According New Axioms and Laws

Valentina Markova*

Bulgarian Academy of Sciences, Bulgaria

***Corresponding Author:** Valentina Markova, Bulgarian Academy of Sciences, Bulgaria.

Received: November 27, 2022

Published: November 30, 2022

Abstract

The article use brand new theory as Theory of New Axioms and Laws. It changes the Classic Field Theory to a much more general theory that consists of 2 new axioms and 8 laws. It was described from previous works of the same author. In this report is used only 1 axioms and 5 laws.It is known that Maxwell's laws (1864) are based on a single axiom [1]. It a closed loop leads to evenly movement (with constant speed) of a vector E: div rot E = 0. The author change this axiom with a new one, according which the movement in an open loop or vortex leads to unevenly movement (with variable speed) of a vector E:div rot E ≠ 0, or div vor E ≠ 0 for vortex [2]. The subsequent results are: the evenly movement is replaced with unevenly movement which can be decelerating or accelerating; in 2D it exists a transverse (cross)vortex and in 3D it exists a longitudinal vortex; the cross vortex in 2D is transformed to a longitudinal vortex in 3D through a special transformation Δ1; the longitudinal vortexin 3D is transformed to a cross vortex in 2D through special transformation Δ2; decelerating vortex emits free cross vortices to the environment that are called "free energy"; accelerating vortex sucks in the same ones free cross vortices and so on. The vector E is not a simple. It turns to be a complex vector: E=A+iV, E=V+ iA or E=-A-iV, E= -V- iA. It can has or amplitude A in a real part, or velocity V as a real part. Cross vortices can form two kinds vortices: a vortex that is generated by amplitude A and the vortex that is generated by velocity V. Each of these may be accelerating or decelerating. But both of them are generators. They are prototypes of material particles. Due to the suction of cross vortices by the accelerating vortex the temperature decreases and due to the emitting of cross vortices by the decelerating field the temperature in environment increases. Inside of the conductor the velocity of Electromagnetic field is constant.But on the periphery it decelerates because of resistance to the wall of conductor. This report offers a specific application of the above theory. In order to understand the nature of superconductivity we have to understand first the nature of conductivity by conductor. Then we can very easily model a superconductor by constructing it as orthogonal to the conductor. This report proposes to mimic superconductivity at normal temperature. The method involves inserting several cylinders of different materials into each other so as to obtain an accelerating electric current with a direction from the periphery to the center.

Keywords: Superconductor; Temperature; Velocity

The essence of conductivity phenomena in ordinary conductor according the new axioms and laws

In the center of an ordinary conductor, the electric field (E) has maximum speed $V(E)_{max}$. The reason is that in center the electric field feels minimal resistance. The speed is distributed unevenly in several cylinders inserted into each other (Figure 1a).

Result: In center of ordinary conductor the electric field (E) has maximum velocity $V(E)_{max}$.

But in the outer cylinder, the electric field has a lower speed because the resistance is greater. Thus, at the periphery of the conductor, the cylinder of the electric field has a minimum velocity $V(E)_{min.}$ The reason is that in periphery cylinder and at boundary

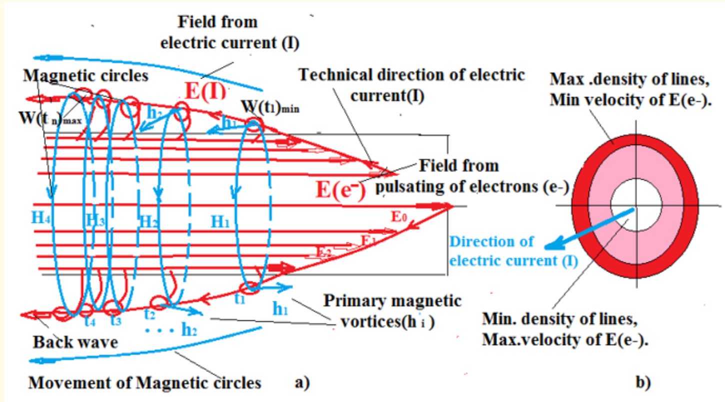

Figure 1: The Conductivity in ordinary conductor.

surface of ordinary conductor the electric field feels maximum resistance (Figure 1a) [2,3].

Results: Along the periphery and at the boundary surface of the ordinary conductor the electric field (E) has a minimum velocity $V(E)_{min}$.

The longitudinal vortex

The electricity field towards the center the conductor matches with pulsating field of free electrons E (e-) inside the metal grid of conductor. The direction of the internal electricity field shows the direction of electron movement from beginning to end as well. It is well known and it should be noted that the speed of movement of bodies of electrons (v) is much smaller than the speed of movement of the electric field which is comparable to the speed of light (c): v << c. The reason is that the speed of field from pulsation in time of electrons is equal to speed of light (c), but the speed of movement of electrons (v) as physical bodies is much less than the speed of field from pulsation in time of electrons (Figure 1a).

Result: In center of conductor the electricity field of pulsating free electrons E (e -) moves uniformly over time in direction from beginning to end.

In boundary surface velocity of electricity field decreases. The movement of E (e-) inside and along the boundary surface is decelerating and the direction is from beginning to end of conductor. This means that at each subsequent point along the reverse distance of conductor velocity decreases with a certain proportion, or the movement is decelerated non-linear. According to Law 5 the decelerating longitudinal vortex decrease its velocity in every point with constant proportion (Figure 1a) [4].

Result: In periphery of conductor the electricity field of pulsating of free electrons E (e-) moves decelerating over the time in direction from beginning to end.

It is known that the electric wave propagates across the medium, in this case across the conductor. It becomes clear that in the center the electric wave E_0 (because the speed is maximum)comes first in time t_0, the outermost wave E_1 comes later in time t_1 and so on, and the most peripheral wave E_n, because the speed is minimal, comes last in time t_n (Figure 1a).

Therefore in inside surface of periphery is formed a relative movement ($E_0, E_1, E_2 \dots E_n$) in opposite direction-from periphery to the center and from end to beginning (Figure 1a).This relative reverse electricity field $E_{rev.}$ is along inside surface of conductor in inverse direction from end to beginning: $E_{rev.} = (E_0, E_1, E_2 \dots E_n)$ [5].

Result: Along the inside surface of conductor the electricity field (E) forms relative reverse electricity field ($E_{rev.}$) which moves as decelerating longitudinal vortex to the inverse direction from end to beginning.

The transverse vortices

According to Law 5 the decelerating longitudinal vortex emits many in number decelerating transverse vortices (called primary cross vortices) in perpendicular direction. This is done simultaneously with the deceleration of longitudinal vortex. The speed of longitudinal vortex decreases while these primary transverse vortexes increase their amplitude. This is done in the inverse direction of movement (from the end to beginning) and in outside surface of conductor. So that at the start time on the outside of the conductor in inverse direction (t_1) the primary transverse vortex has minimum amplitude W $(t_1)_{min}$ or in this point the electricity potential (U) is minimum: (U)=W $(t_{1)min}$.

Result: At the start time on the outside of the conductor (t_1) there is minimum electricity potential (U) as minimum amplitude of transverse vortex W $(t_1)_{min}$.

At the end time on the outside of the conductor (t_n) the primary transverse vortex has maximum amplitude W $(t_n)_{max}$ or in this point the electricity potential (U) is maximum: (U) =W $(t_n)_{max.}$

Result: At the end time on the outside of the conductor (t_n) there is maximum electricity potential (U) as maximum amplitude of transverse vortex W $(t_n)_{max}$.

The difference between the final W (t_n) and initial amplitudes W (t_1) outside the conductor is proportional to the voltage drop (U): U = W (t_n) - W (t_1). The voltage magnitude difference is measured with a voltmeter.

Result: The voltage drop U is the difference between the final W (t_n) and initial W (t_1) amplitudes or the final (t_n) and the initial (t_1) times outside the conductor: U = W (t_n) - W (t_1).

Therefore outside the conductor are obtained amplitudes of transverse vortices (W (t_1), W (t_2),…, W (t_n)) in time (t_1,t_2,…t_n) in inverse direction of conductor –from end to beginning. This inverse wave over time (t_1,t_2,t_3,....$t_{n)}$ is called Back wave outside the conductor in reverse direction to the direction of internal electricity field E (e -) (Figure 1a).

Result: The Back wave is moved outside of surface the conductor and it is described over time (t_1,t_2,t_3,....$t_{n)}$.

Result: The external Back wave (t_1,t_2,t_3,....$t_{n)}$ and internal electricity field E (e -) are in mutual inverse directions.

Result: The Back wave is described from engineers as Technical direction of electricity current E (I).

Result: The Technical direction of electricity current E (I) is in time (t_1,t_2,t_3,....$t_{n)}$ of electricity wave from end to start the conductor.

If we sequentially place a measuring instrument, such as an ammeter, it will measure the speed of electricity current (I) along the surface of the conductor.

The electricity current (I) along the external surface is proportional to the speed of Back wave. It (I) is in the opposite direction to the internal electric field (E) of the conductor (Figure 1a).

Result: The electricity current (I) is proportional to the speed of Back wave outside the conductor.

According to Law 1, every decelerating cross vortex in 2D emits from its center an accelerating longitudinal vortex (h_i) in 3D. So every decelerating open cross vortex (i) shoots in its center perpendicular accelerating longitudinal vortex (h_i). The all of these accelerating longitudinal vortices (h_i) form a wheel-closed vortex (H) in a direction corresponding to the decelerating electricity current (I) (Figure 1a). This direction is defined by the Right Hand Rule. If the thumb of right hand points the electricity current (I) the curled fingers point the direction of closed circle of magnetic field (H) outside the conductor. The closed vortex direction (H) is to the left when viewed against the direction of motion of the electric current (I) side the conductor (Figure 1a) [6].

Result: The magnetic field of ordinary conductor (H) is outside of conductor.

Result: The direction of closed vortex of magnetic field (H) is to left, if the observer waches against the direction of electricity current (I).

For a decelerating electric field, both Law 1 and Law 5 apply. According Law5 when velocity of longitudinal vortex decreases (is decelerated) the amplitudes of cross vortices increase (is accelerated). This means that the radius of wheels of magnetic field (H) increases in direction of decreasing of longitudinal vortex as electricity current (I).

Result: The radius of wheels of magnetic field (H) increases in direction of decreasing of longitudinal vortex as electricity current (I).

Result: The external Electricity field E (I),the Electricity current (I), the Back wave and the Magnetic field (H) are spreaded outside the conductor.

Because of that electricity current (I) moves decelerating outside the conductor it emits to environment many free cross vortices which form accelerating magnetic field (H) (Law 5). This means that they heat environment and increase temperature.

Result: The electricity current (I) and the magnetic field (H) are moved outside the conductor, increase temperature of environment and form energy losses.

The conductivity in an ordinary resistor, according the new axioms and laws

The conductor has a small diamerer $(d_{min})_{cond}$, little resistance $(r_{min})_{cond}$, and therefore a big electric current $(I_{max})_{cond}$ with a high density which moves on its small surface. Therefore the electric field inside the thin conductor (d_{min}, r_{min}, I_{max}) has big velocity with bigger denser line which is concentrated to periphery.

Result: The ordinary conductor has less diameter $(d_{min})_{cond}$, little resistance $(r_{min})_{cond}$, and therefore a large electric current $(I_{max})_{cond\ res}$ moves on less surface with big density: $(d_{min})_{cond}$, $(r_{min})_{cond}$, $(I_{max})_{cond.}$

It is well known that an ordinary resistor has a higher specific resistance than an ordinary conductor. At the same time the ordinary resistor has a larger radius (bigger volume) than ordinary conductor. The resistor has a significantly larger diameter $(d_{max})_{res}$, much larger resistance $(r_{max})_{res,}$ and therefore a much smaller electric current $(I_{min})_{res}$ which moves on its bigger surface with less density. Therefore, the electric field inside the more thick resistor with big resistanse (d_{max}, r_{max}, I_{min}) has less velocity with less denser line. The electricity lines of resistor are concentrated to periphery such as those of the conductor.

Result: The ordinary resistor has a significantly larger diameter $(d_{max})_{res}$, much larger resistance $(r_{max})_{res}$ and therefore a much smaller electric current $(I_{min})_{res}$ moves along its big surface with less density: $(d_{max})_{res}$, $(r_{max})_{res}$, $(I_{min})_{res.}$

When the electric field coming from a thin conductor (d_{min}, r_{min}, I_{max}) reaches a thick resistor (d_{max}, r_{max}, I_{min}) it expands towards the periphery of the resistor. The reason is the significant increase in the specific resistance in the form of a jump (Figure 2b).

Result: The electric field which comes from a thin conductor (d_{min}, r_{min}, I_{max}) and hits the a thick resistor (d_{max}, r_{max}, I_{min}) it expands towards the periphery of the resistor with a jump.

According to Law 5 of the new axioms and laws, because of that the velocity of electric line sharply decreases the electric lines will radiate transverse primary open vortices with big amplitude outward and beyond the surface of the resistor perpendicular to it.

Result: At boundary phase transition the electric lines radiate transverse primary open vortices with big amplitude outward and beyond the surface of the resistor perpendicular to it.

Therefore at the boundary phase transition between conductor and resistance, another very extreme phenomenon intervenes. This is the sharply decrease in the speed of the electric power lines accompanied by the sharply expansion of the volume of the resistance. The reason for this is that at the boundary transition the speed of the electric lines of force drops very sharply and therefore they radiate outward into the surrounding space the additional extraordinary primary transverse vortices (Figure 2b).

Result: The additional extraordinary primary transverse vortices are radiated at the boundary phase transition.

That is why the amplitude of the emitting extraordinary transverse vortices at the beginning of the resistor is much greater than at the end (Figure 2c).

Result: The amplitude of primary transverse vortex is maximum of the beginning of length and is minimum at the end of length.

Along the entire length of the resistor the primary transverse vortices are open and therefore they take heat out of the body of the resistor. The surrounding space increases its temperature or it heats up and therefore the energy of the electric field suffers significant losses (Figure 2c).

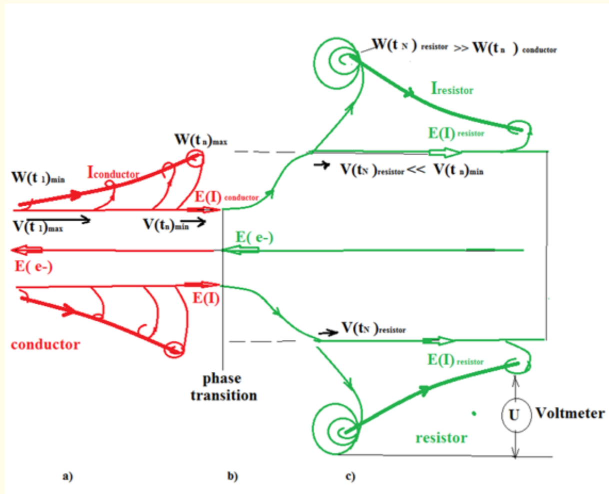

Figure 2: Conductivity at phase transition from an ordinary conductor to an ordinary resistor, according new axioms and laws.

Result: The additional extraordinary transverse vortices are emitted from surface of resistor and additional heat the environment.

According to Law 5, the movement of the electric field E (I) along the length of the resistance is decelerated.

For conductor the amplitude of radiated transverse vortices at beginning of length is less than the amplitude at the end (Figure 2a).

For resistor the amplitude for of the radiated vortices at the beginning of the length is greater than the amplitude of the radiated vortices at the and of the path (Figure 2c).

The boundary phase transition situation between conductor and resistance is extraordinary. The reason is that we have a boundary phase transition point and at this point extraordinary shock emission of transverse vortices takes place (Figure 2b).

As a final result for resistor the amplitude of the radiated transverse vortices at the end of the resistor is much smaller than the amplitude of the extraordinary shock radiation at the beginning of the resistor. The difference between amplitudes of emitted transverse primary vortices at start and at finish of length of resistor is equal to the voltage drop: $U= U_{max} - U_{min}$. This voltage drop is measured by electricity device called voltmeter.

Result: For resistor the voltage drop U is measured from start ($U_{max))}$ to end (U_{min}) of length.

At the beginning of the conductor the amplitude is minimum and at the end the amplitude becomes maximum. Therefore for conductor the votage drop is measured from end to start of its length (Figure 2a).

Result: For conductor the votage drop is measured from end ($U_{max)}$ to start (U_{min}) of its length or in inverse direction than in resistor.

Construction of superconductor with decelerating electric current (I) to the center

We saw that in conductor the electric field (E), the magnetic field (H), the cross vortices (W) as heat is emitted outside from periphery (Figure 1a). For difference of conductor here is proposed a kind of superconductor which concentrates electric (E) and the magnetic field (H) in center. The new approach is such that the superconductivity design will focus the electromagnetic energy in center (Figure 3). This design should be inverse to the conductivity design which realises the electromagnetic energy towards outside (Figure 1).

Proposal: The superconductivity design should be inverse to the conductivity design.

By this way it is possible to achieve some effect of superconductivity in normal temperature. In this case of a superconductor the central electricity field (E_n) must have a minimum velocity because it experiences maximum resistance. In the outer cylinder, the electric field (E_1) must have a higher velocity because the resistance should be less. Thus at the very periphery of the superconductor, the electric field cylinder (E_0) must have a maximum velocity because it experiences minimal resistance [4,5].

Result: At the very periphery of the ordinary superconductor, the electric field (E_0) has maximum velocity but in center the electric field cylinder (E_n) has minimum velocity.

As an example, we will consider a superconductor of 2 layers. They are structurally inserted into each other like 2 cylinders made of different materials. In this case, the metal of the outer cylinder (for example silver Ag) must have a much high specific conductivity than the metal of the inner cylinder (for example iron Fe). Let us choose as outer cylinder metal silver (Ag) with specific resistance 1.58 10^{-8} (Om.m).

Proposal: The effect of this kind of superconductivity can be achieve by constructing the peripheral layer of the superconductor from metal with high conductivity, for example from silver (Ag).

This means that the speed of the electric field (E_0) in the outer cylinder (Ag) will be much greater than the speed of the electric field in the inner cylinder (Fe). Moreover, in the inner iron (Fe) cylinder, the velocity along the boundary surface next to the silver (Ag) is greater than the velocity in the center.

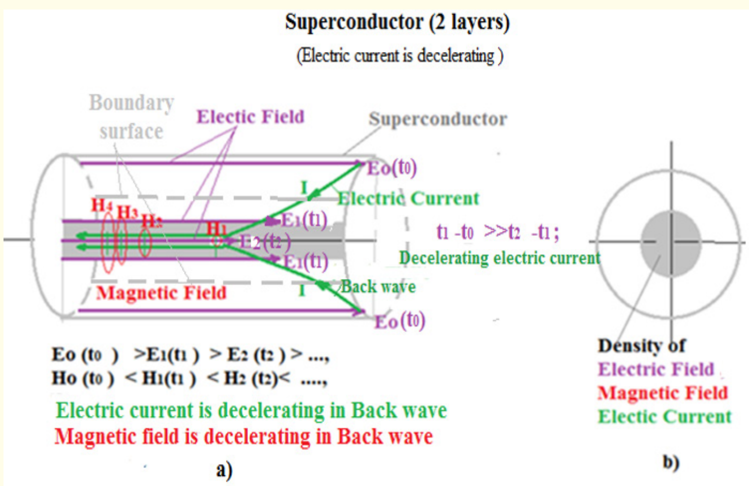

Figure 3: The Electric Current (I) is decelerating.

Therefore the velocity in periphery is maximum and this is the reason the electricity field (E_0) in the periphery to appear first (t_0) in time, But the velocity in inner boundary layer must be less and electricity field (E_1) appears later (t_1) in time. In the very center velocity must be minimum and this is the reason the electricity field (E_2) in the very center to appear at latest (t_2) in time. This effect can be obtained constructively by incorporating a metal cylinder with a higher specific resistance in the center of the superconductor. For example it can be iron (Fe) with specific resistance 9.9 10^{-8} (Om.m) (Figure 3a).

Proposal: The effect of this kind of superconductivity can be achieve by constructing in the center a metal with low conductivity, for example it can be iron (Fe).

According to Law 5, due to the friction and resistance of the material in the center of the superconductor, the electric Field (E_2) generates decelerating transverse vortices, which radiates to inwards as a heat. So in center the temperature will increase.

According to Law 1, every of these decelerating transverse vortices shoots from the center of their transverse vortex (outward) accelerating longitudinal vortex (h_i) in the direction defined by the Right-hand rule (Figure 1a). These longitudinal vortices form a wheel-closed vortex (H_i) with increasing amplitude in a direction coinciding with the direction of the electric current (I_i) which is inverse to the direction of electricity field (E_i). The closed vortex form magnetic field (H_i) with direction is to the left when the observer views against the direction of motion of the electric field (E_i) and to the right if observer views against the direction of the electric current (I_i). So the difference in velocities forms an electricity current with inverse direction called Back with direction from periphery to center or from outside to inside (Figure 3a).

Result:: The difference in velocities forms an inverse electricity current (I_i) called Back wave from periphery to center or from outside to inside.

From description of conductor it was clear that the Technical Direction of Electricity current (I) has inverse direction than the direction of electricity field (E) (Figure 1a). Therefore the Technical Direction of Electricity current coincides to the direction of so called Back wave which is from periphery to the center of superconductor.

Results: The Technical Direction of Electricity current (I) of superconductor is obtained from periphery to center.

The direction of the electric current (I) in a conductor is from the center to the periphery (Figure 1a) while the direction of the electric current in the superconductor is from the periphery to the center (Figure 3a). This is the reason that there has not a big energy losses as heat in the surrounding space. At the same time, the magnetic field (H) is located in center of the superconductor and there is no radiation as well [6].

Result: For ordinary superconductor the electric field (E), the magnetic field (H), and the electric current (I) propagate inside from periphery to the center.

The fact that, the electric field (E), the magnetic field (H), and the electric current (I) propagate inside the superconductor is the reason for the absence of big energy losses in the form of radiation (Figure 3a, Figure 3b).

Result: In ordinary superconductor there are not a big energy loss.

The conductivity in a common conductor (for example a copper conductor) is characterized by a maximum density of lines of electricity field to the periphery (where the velocity decreases to a minimum) and a minimum density in the center (where the velocity is maximum) (Figure 1a).

The conductivity in a Superconductor (for example a silver in periphery and iron in center) is characterized by a maximum density of lines of electricity field (E) to the center (where the velocity decreases to a minimum) and a minimum density in the periphery (where the velocity is maximum) (Figure 3a).

Results: The conductivity is non-linear along a section of the diameter.

Non-linearity of the distribution is due to a difference in field viscosity. When in the center the velocity is less (due to high viscosity), the lines of force (E) are stuck to each other and move in a bundle. But at the periphery the velocity is so great that the viscosity cannot keep the lines of force (E) in a bundle (Figure 3a).

Result: To the center the lines of force are stuck to each other but at the periphery the lines are further apart.

So called Back wave is decelerated because in starting (at the periphery) the lines of force are discharged and the distance between adjacent points is large. Towards the center the lines of force become closer and the distance between neighboring points is reduced. The reason for this is that in the periphery is placed the metal with low resistance (Ag) and the speed is maximum, and in the center is placed a metal with high resistance (Fe) and therefore the speed is minimum and electricity lines move in pack. This is the reason that in the center of the superconductor the Back wave is decelerated significantly.

Result: Along Back wave the electricity current (I) is decelerating from the periphery to the center.

The advantage is that it conserves energy for a long time. The disadvantage is that in center is focused the decelerating electricity current as well. So according Law 5 it emits free cross vortices from center to outer metal as heat (Figure 3b). Therefore in center has an energy losses as some heat. Nevertheless it worth to describe this variant.

Result: Along the central axis of this type of superconductor is emitted heat.

This means that the center will heat up and will consume some energy (Figure 3b). The conclusion is that this type (2 layed) of superconductor with decelerating electric current to the center is not ideal.

Result: This type (2 layers) of superconductor is not ideal.

Construction of superconductor with accelerating electric current to the center (I)

Technological construction of this kind of superconductor is done by gluing several (minimum of 3) pipes incorporated and nested into each other with different resistances (or specific resistances ρ_i).For example, the most peripheral tube will be of silver (Ag) with specific resistance ρ_0= 1.58 10^{-8} (Om.m), the inner one -of aluminum (Al) with specific resistance ρ_1= 2.7 10^{-8} (Om.m) and the innermost one -of carbon (C) with specific resistance ρ_3= (4.0-5.0)10^{-5} (Om.m) (Figure 4a) [7].

Proposal: The most peripheral tube to be of silver (Ag) with specific resistance (ρ_0), the inner tube to be of aluminum (Al) with specific resistance (ρ_1) and the innermost tube to be of carbon (C) with specific resistance (ρ_3), where: $\rho_0 < \rho_1 < \rho_2$.

Because of big resistance of carbon material (C) (ρ_2 = (4.0-5.0)10^{-5} the electric field (E_2) has minimum velocity in the innermost tube. Because of much less resistance of aluminum metal (Al) (ρ_1=2.7 $10^{-8)}$ the electric field (E_1) has much more velocity along outer adjacent pipe. Because of minimum resistance of silver metal (Ag) (ρ_0 =1.58 $10^{-8)}$ the electricity field (E_0) has maximum velocity along surface of periphery pipe.

Result: Electricity field (E_2) has minimum velocity in center, the significant more velocity (E_1) in adjacent layer and a little more in periphery (E_0), where: $E_0 > E_1 > E_2$.

It is known that the electric field (E) moves transversely. The direction of electricity field coincides with direction of electron movement (Ee-). Due to the differences in speeds of the electricity field, the lines of electricity field (Ee-) are not parallel, but highly non-linear. In the center of the superconductor, the line of force is strongly concave or there is a minimum, and towards the periphery are strongly convex or there is a maximum.

Result: The electricity field (Ee-) are not parallel, but the lines are highly non-linear.

But let's see what happens with the electric current (I) that moves in the opposite direction of the electric field (Ee-) in the form of so called Back wave. The difference in the distance in the opposite direction between 2 adjacent lines of force in the periphery is much smaller than the difference in the distance between 2 adjacent lines to the center of the superconductor.

Proposal: To make a construction that the conductivities of metal in the periphery (Ag) and metal in the adjacent inner layer (Al) to be much smaller than the difference between the conductivities of this metal in inner layer (Al) and the material in the center of the conductor (C).

Therefore the difference between the conductivities of metal silver (Ag) in the periphery and metal aluminum (Al) in the adjacent inner layer is much smaller than the difference between the conductivities of the aluminum metal (Al) and the carbon material (C) in the center of the conductor:

(Al,ρ_1=2.7 $10^{-8)}$- (Ag,ρ_0 =1.58 $10^{-8)}$<< (C,ρ_2 = (4.0-5.0)10^{-5}-(Al,ρ_1=2.7 $10^{-8)}$.

We must emphasize that a difference in the lines of force of the electric field determines the magnitude of the electric current (I) in the Back wave.

Result: E_2-E_1= ΔI_1 is electric current in central tube: E_1-E_0 = ΔI_0 is electric current in peripheral line.

This fact is the reason that in the periphery the electric current ΔI_0 is smaller than towards the center ΔI_1.

Result: The electric current starting at the periphery ΔI_0 is less than the electric current entering to the center ΔI_1:

$\Delta I_0 << \Delta I_1$.

The reverse wave manifests itself as an electric current (I) starting at the periphery and accelerating inwards towards the center of the superconductor.

If electricity current in center is decelerating it would emit (According Law5) cross vortices as heat and would has energy loss. But the electricity current (ΔI_1) in center is accelerated it does not emit cross vortices in form as heat but it will suck in free cross vortices from adjacent layers [7].

Result: The accelerating electric current (ΔI_1) in center does not emit heat.

According Law 6 the accelerating current suck in free cross vortices and will cool the center. Therefore in center the temperature will decrease [8].

Result: The center of this kind (3 layed) of superconductor is cool.

According to Law 6, the accelerating vortex sucks in free cross vortices which were emitted at previous times and in adjacent layers.

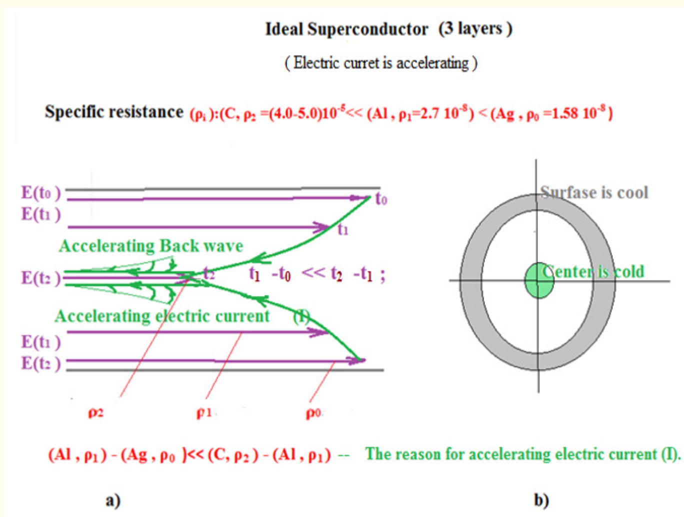

Figure 4: The Electric Current (I) is acceleration.

Due to accelerating moving of electric current (I), it sucks in the free cross vortices. According to the Law 3 this electric current (I) accelerates more and more as a non-parametric process. According Law 4 the acceleration is done because it is an avalanche process. The reason is that the cross vortices add mass and energy to the flow of the accelerating Electric Current (I) and accelerates it more and more (Figure 4a).

Result: The accelerating electricity current (I) accelerates in time end in length of superconductor as avelanch wave.

For superconductor the accelerating Back wave is obtained from periphery to center, which is interpreted by engineers as the Technical Direction of Electricity current (I). The accelerating electric current in the superconductor has a direction from the periphery to the center. For comparison-the Technical Direction of the electric current in a conductor has a direction from the center to the periphery [4].

Result: The Technical Direction of the accelerating electric current (I) in the superconductor is from the periphery to the center.

The accelerating electric current does not emit free vortices as heat to outside and there are not energy losses. The magnetic field is located in center of the superconductor and there is no radiation to outside as well. This is the reason that there won't be no energy loss (Figure 4a).

Result: In this kind (3layed) superconductor there are not energy losses.

The reason for the absence of energy loss in the form of radiation is first that, the electric field (E), the magnetic field (H), and the electric current (I) propagate inside the conductor and second - the movement of electricity current in center is accelerating but not decelerating (Figure 4b) [7].

Result: The electric field (E), the magnetic field (H), and the electric current (I) propagate inside the superconductor and their movement is accelerating.

The described superconductor is characterized by a maximum density of electrical field (E) in the center (Figure 4b).

Result: This kind (3 layed) of superconductor will keep its electricity field (E) in normal temperature for a long time as a perfect accumulator.

The electric field (E) in the center has a high density because the speed is minimal. But the electric current (I) flowing in the opposite direction (Back wave) is accelerating and it has a maximum speed and a minimum density or in center electric current (I) is generated. Therefore the following very useful phenomenon should be emphasized - in the center not only energy is accumulated but energy as electric current (I) is generated.

The reason is the implementation of an accelerating Back wave that creates an accelerating electric current (I). The acceleration is equivalent to generating a current. In ordinary conductors there are losses of current (in the periphery), and in this type of superconductor there is generation of electric current (I) (in its center). The current is maintained due to additional suction of all free transverse vortices emitted at previous times and located in the surrounding layers. Therefore this kind of superconductor can use as electricity current generator [7,8].

Result: This kind (3 layed) of superconductor will generate electricity current (I) in center as a perfect generator.

We saw that the accelerating current is constructively made. But the current is maintained due to additional suction of all free transverse vortices emitted at previous times and located in the surrounding layers.

Result: This variant (3 layed) of superconductor is ideal.

Conclusion

- The described above 3 layed type of superconductor can accumulates energy in normal temperature. This is the reason that we can use it as accumulator. We can increase number of layers in 4, 5 and so on. We can replace some metal layers with liquid and form a sandwich of ideal accumulator.
- Even something more - because of that the electricity current in center is accelerating we can construct the layers in such way that acceleration in center to be higher that declaration in periphery. We saw that the current is maintained due to additional suction of all free transverse vortices emitted at previous times and located in the surrounding layers. Thus this kind of superconductor can use as electricity current generator.
- Above described sandwich of layers (metals and liquids) seems to be cheaper. The reason is that we can replace the expensive metal (for example Ag and Al) to other so that the difference between special conductivities in periphery to be less then difference between special conductivities toward the center. It does not matter what metals are used and what their price is. It is essential that the difference in conductivities of the peripheral cylinder and the innermost intermediate cylinder is smaller than the difference in conductivities of this innermost intermediate cylinder and the center.

The described sandwich is definitely more ecological. The reason is that we can select and arrange the layers so that we get an accelerating electric current in the center using much cheaper materials by cleaner, production with lower energy and less waste products.

Bibliography

1. Landau LD and EM Lifshitz. "The Classical Theory of Fields (Volume 2 of A Course of Theoretical Physics)". 4 Edition., Butterworth-Heinemann (1975).
2. Markova V. "The other axioms (Monograph, Book 2)". Nautilus, Sofia (2005).
3. Markova V. "New axioms and structures". *Fundamental Journal of Modern Physics* 8.1 (2015): 15-24.
4. Markova V. "Extended Field Theory. New Axioms, Laws and consequences". *IOSR-JAP, Journal of Applied Physics* 9.2 (2017).
5. Markova V. "A generator using a tube of longitudinal accelerating open vortices nested one inside the other for positive feedback". 3th International Conference on High Energy Physics, Rome, Italy, Dec. 11-12 (2017).
6. Markova V. "About the new axioms and laws". 5th International Conference on Theoretical and Applied Physics, Vienna, Austria, July 02-03 (2018).
7. Markova V. "Modeling of the superconductivity by using accelerating longitudinal vortices". 3rd International Conference on Magnetism and Magnetic Materials, Rome, Italy, October 22-23 (2018).
8. Markova V. "Superconductivity, According to the New Axiom and Laws". *International Journal of Recent Advances in Multi-disciplinary Research (IJRAMR)* 7.6 (2020): 5954-5962.