



Earth's Outer Core Metal Liquid Flow Generates Magnetic Field without using Geodynamo

By Angel Perez Sanchez

Comillas University (ICADE)

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Geomagnetism Generation, is currently a mystery and leading existing theory "Earth's core and Geodynamo" hasn't yet been able to explain Earth's magnetism formation clearly.

Explore another way Earth's magnetism is formed, by electric current movement through the outer core's liquid metal flow considered as a whole and not divided into separate convection currents.

This leads us to a more straightforward geomagnetism theory without adding a sum of convection currents to create a global magnet that covers the Earth.

The result is a reasonable theory of geomagnetism that would also explain Magnetic Declination and Geomagnetic Reversal, while opening a new way on Sun's magnetism and planets magnetism research.

GJRE-A Classification: LCC: QC809.M25



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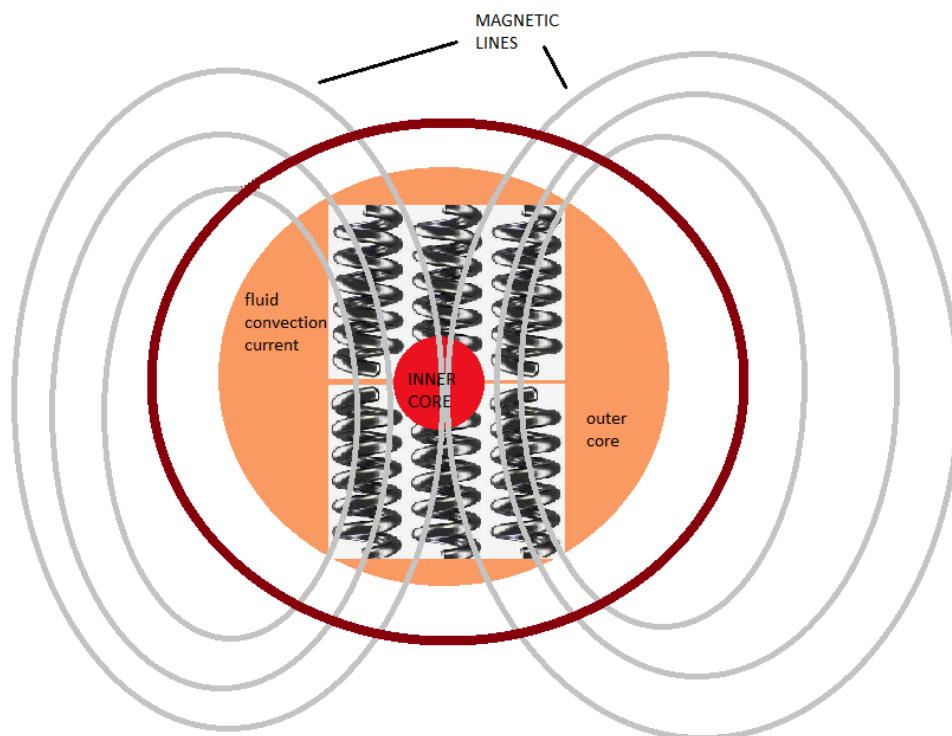
1. EARTH'S MAGNETISM

General, magnetism can be generated by:

1. Permanent magnet

Geomagnetism can't come from a permanent magnet because it is affected by core heat, since heat, demagnetizes permanent magnets.

2. Dynamo effect, (a conductor is placed around a magnet, when it rotates around the magnet, produces an electric current that generates a magnetic field.

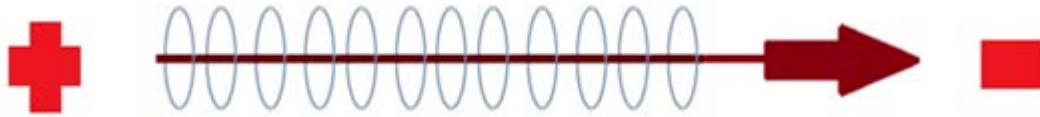


Outer core's convection currents rotate around a pre-existing magnetic field and is difficult to explain how this pre-existing magnetic field is formed and how convection currents rotate around it; at the same time, it would be necessary to unify effect of all convection currents in a single terrestrial magnet.

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3. *Electric current*

Let's start with a magnetic field generated by an electric current wire.



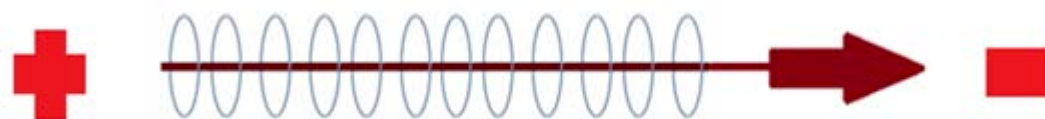
To understand geomagnetism is produced by an electric current, we must consider Earth's outer core with electrically charged liquid metal motion, which behaves like the flow of electricity in a current-carrying wire.

Can a charged liquid metal flow generate a magnetic field?

To answer this question, look at these photos of magnetic fields generated on the Sun by plasma flow. (Obtained from NASA on TV series: "The Universe" Secrets of the Sun).

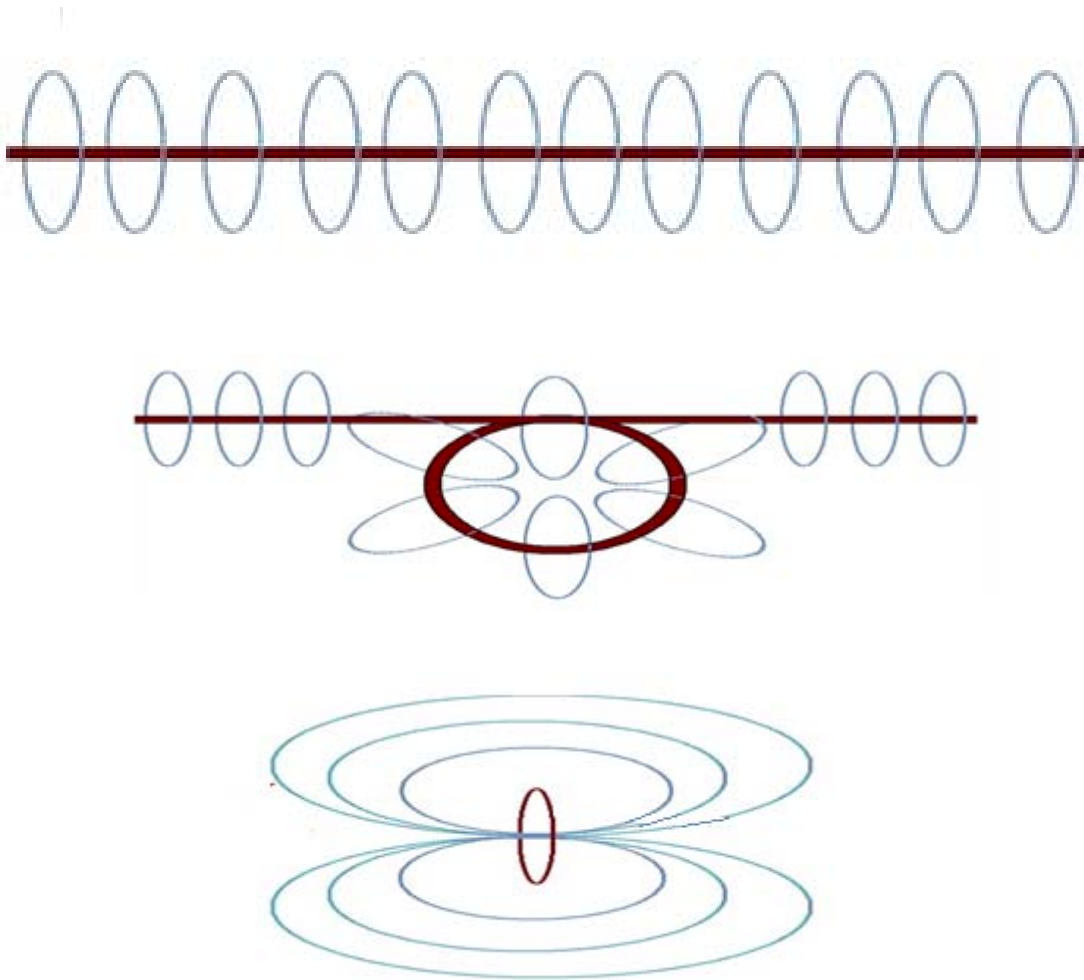


There is a similarity between the magnetic field generated by a current cable and that generated by plasma flow.

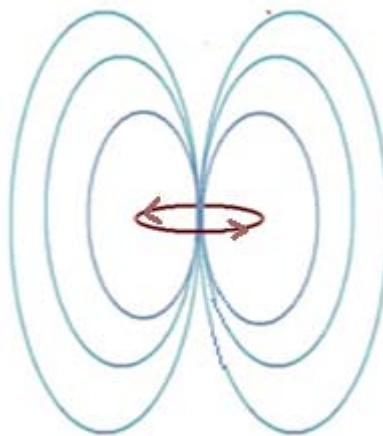


How do we go from magnetic field created by Sun charged plasma flow to magnetic field created by Earth?

Twisting a current-carrying wire:

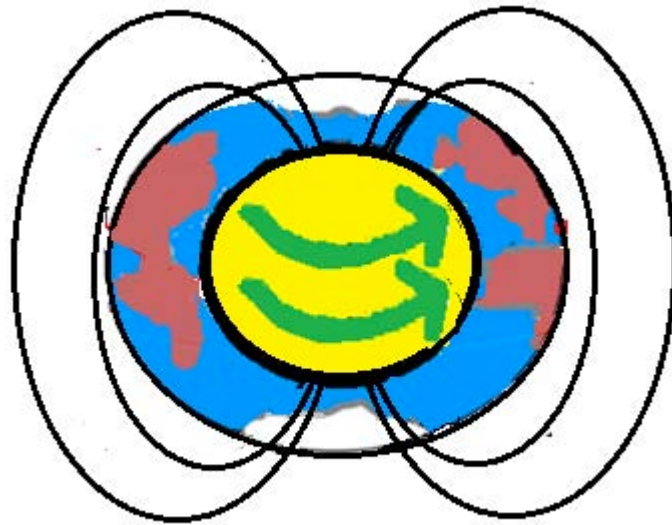


Magnetic field produced by current coil.



Horizontal view of magnetic field produced by current coil.

If Earth's outer core charged liquid metal flow is rotary, we obtain a magnetic field similar to a current coil.



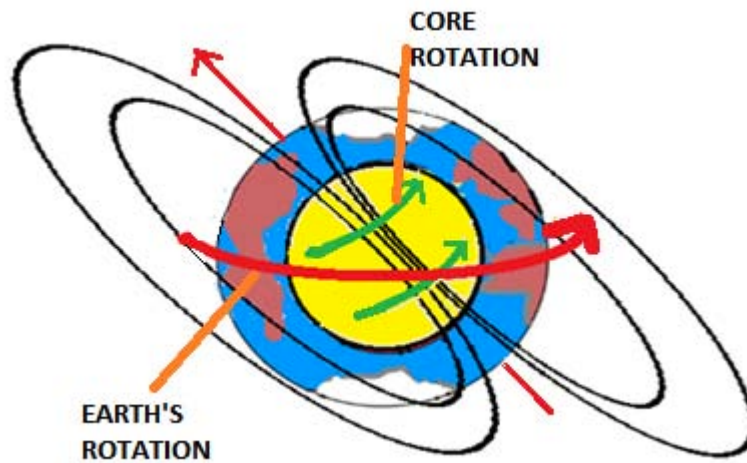
Due to Earth's rotation, charged Earth's outer core liquid metal (iron and nickel) keeps a rotary inertial motion. But how can this fluid metal be charged?

II. CHARGING BY FRICTION HYPOTHESIS

Electrification by friction: When we rub two neutral materials, both are charged, one with a positive charge and the other with a negative charge, so that when they separate both bodies remain with opposite charges.

Earth's mantle rubs against metallic outer core. Due to friction, Earth's mantle atoms electrons are released and transferred to Earth's outer core, whereby mantle becomes positively charged and core negatively charged. The core's metallic fluid, once charged, produces a current coil effect when it rotates.

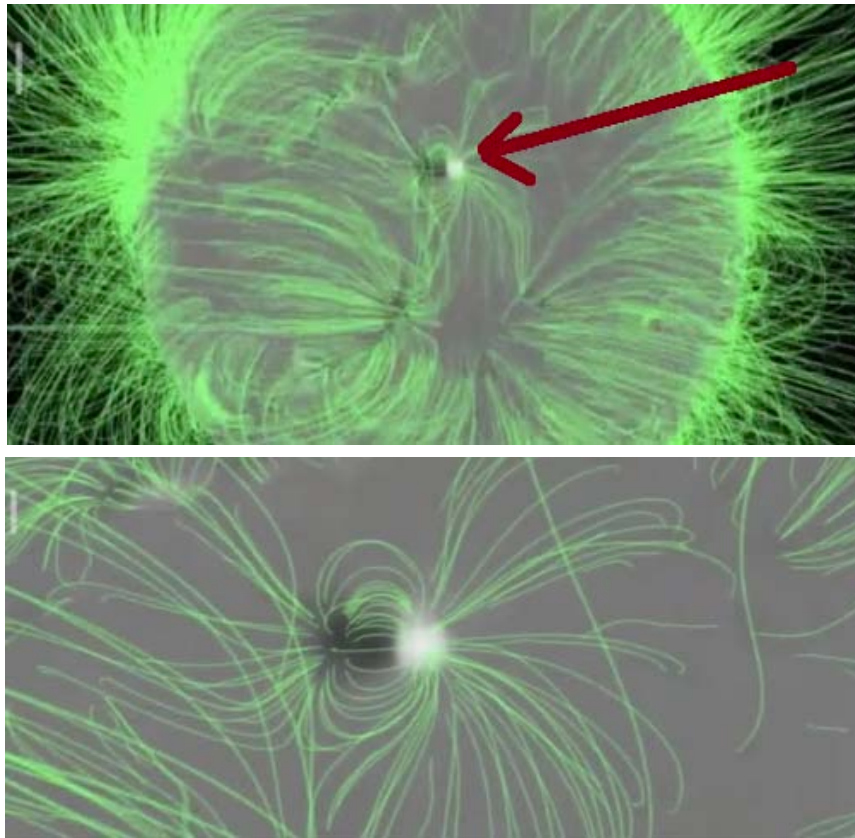
For this effect to occur, the outer core's spin can't be synchronized with Earth's mantle and crust rotation: This rotation must be asynchronous.



This asynchrony is produced by different density between mantle and outer core.

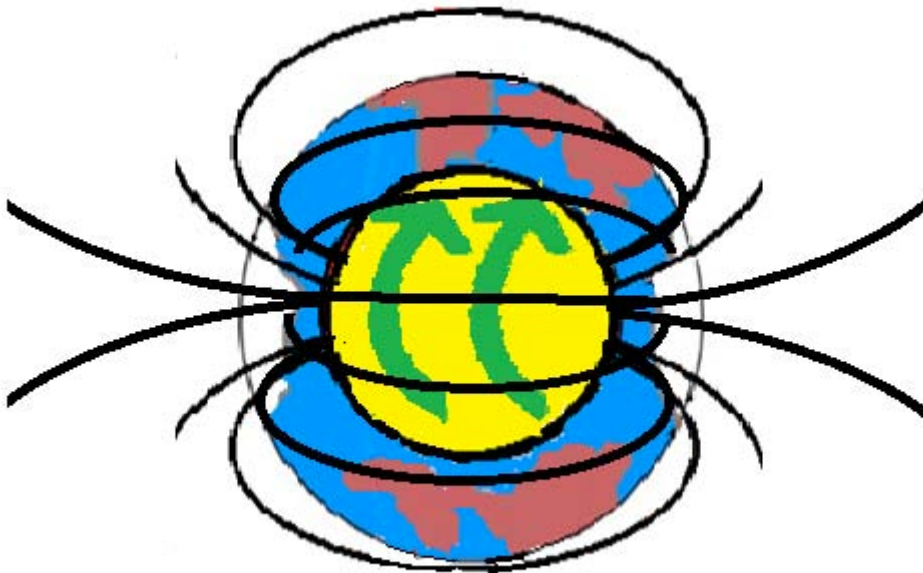
How to get proof magnetic field is produced by a circular metallic fluid current?

On following image, a circular Sun plasma stream creates a magnetic field similar sized to a planet.

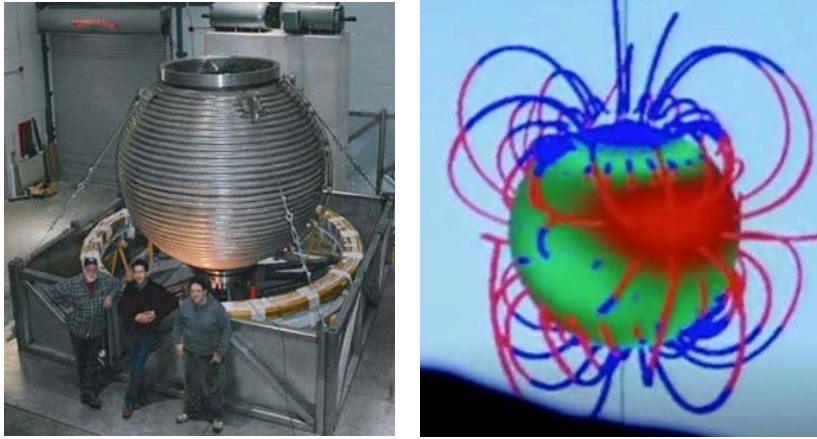


Images from NASA on the TV series: "The Universe" Secrets of the Sun

Circular motion on solar plasma flow creates a magnetic field similar to Earth's magnetic field.



Dr. Daniel Lathrop's theory explains how a liquid metal ball can generate magnetism, and he experimented with a ball in which he deposited liquid metal that rotated at 30 revolutions per second.



Images from Maryland University Geodynamo Laboratory

Dr. Laudrup doesn't get a homogeneous magnetic field like Earth's, instead he gets a chaotic one.

How can Earth's liquid metal core rotation create a homogeneous magnetic field?

The way the outer core rotates and charges itself, could be the answer.

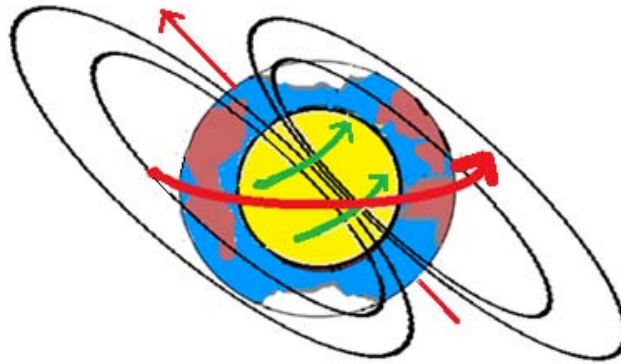
Earth's crust and mantle rotate at a certain speed, and drag the rotation of the core, but the latter, having a higher density, rotates at a slower speed than mantle, and both do not rotate in synchrony. This asynchronism is what produces charge of metallic outer core.

The way outer core rotates, acts as a uniform whole, and charges itself electrically, also acts as a uniform whole, which gives homogeneous to Earth's magnetic field, instead of creating chaotic magnetism like Dr. Daniel's experiment.

Magnetic field created by a circular solar plasma stream: are the proof of geomagnetism can be produced similarly to an electric current flow through a wire without needing Geodynamo.

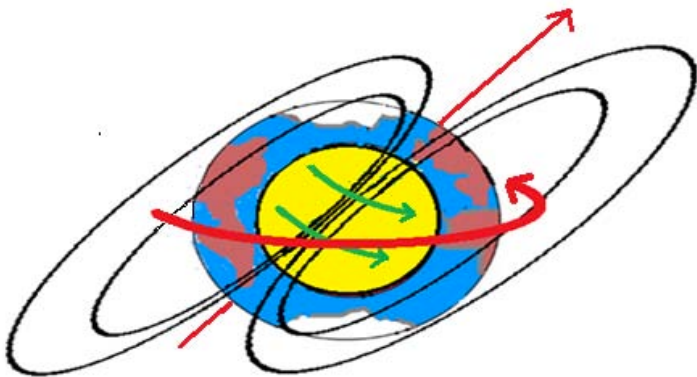
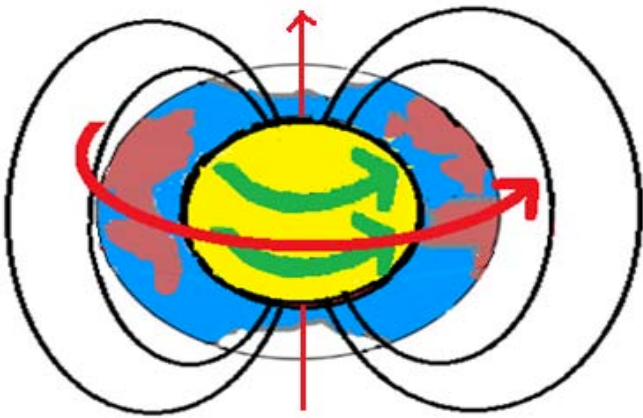
III. SECULAR VARIATION HYPOTHESIS

Owing to Earth's outer core fluid motion, magnetic poles are constantly Moving.



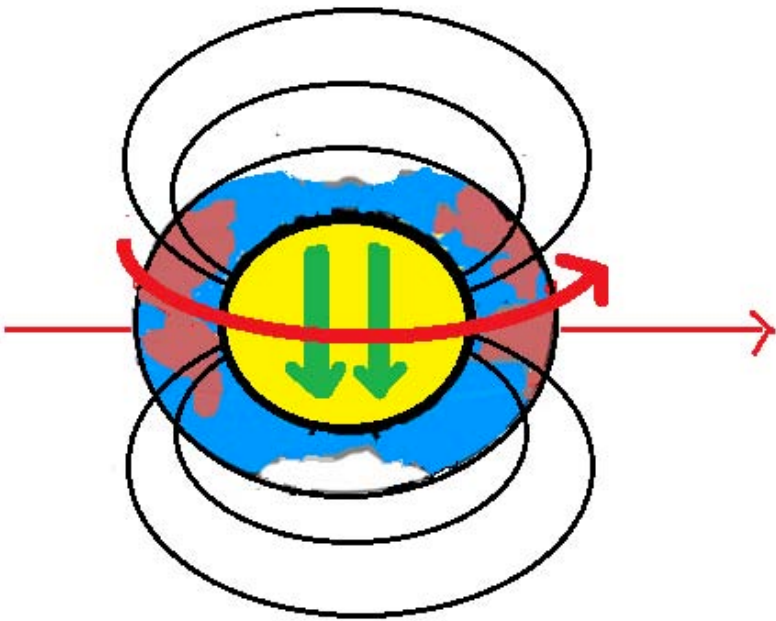
Earth's core has a different motion (green lines) than Earth's rotation (red line). Different direction and speed, is necessary for outer core to be charged by friction.

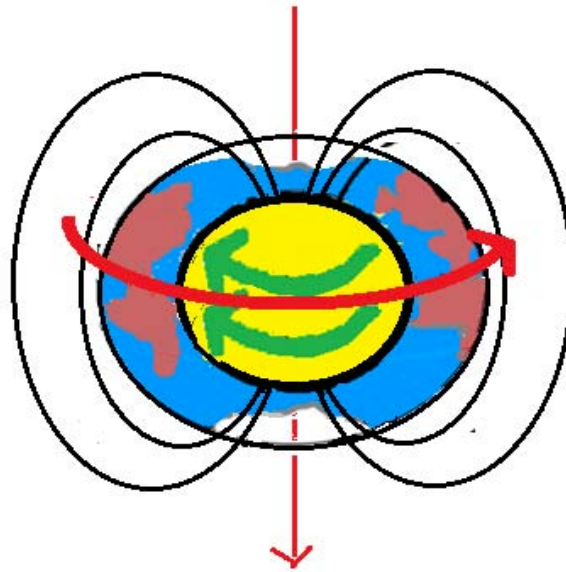
This difference between mantle and core rotation direction is the cause of magnetic declination. The hypothesis is: core is changing its plane rotation by turning it clockwise.



IV. GEOMAGNETIC REVERSALS HYPOTHESIS

If Secular Variation continues clockwise direction; magnetic declination can turn into a magnetic reversal.





BIOGRAPHY



Angel Perez Sanchez was born in 1961 in Madrid, Spain and studied at the Comillas University (ICADE) (Madrid-Spain), obtaining the title of Business Lawyer in 1986; Independent researcher, scientific writer.

Books:

- "Unveiling the Mysteries of Magnetism"
- "The Book of Evolution Evolutionary Memory"
- "Finally, a Reasonable Theory of Everything"
- "The Essence of the Crystal"

~ Member of the RSEF Royal Spanish Society of Physics.–

~ Member of the CEMAG Spanish Club of Magnetism–

***"Best Presentation" Award at the International Conference on Accelerated Universe, Dark Energy and Expansion Models ICAUDEEM in October 2023 in London with the presentation "Consideration of Starlight Waves Redshift as Produced by Friction of These Waves on Its Way through Space" "On journal "World Academy of Science, Engineering and Technology", on 2024-10-09.

***"Best Presentation" Award at the International Conference on Condensed Matter, Diamagnetism and Paramagnetism ICCMPDP in August 2023 in Barcelona with the presentation "Magnetic Lines of Force & Diamagnetism" MAGNETIC LEVITATION/Magnetic Lines of Force and Diamagnetism (waset.org)/

Other papers "Consideration of Magnetic Lines of Force as Magnets Produced by Percussion Waves" on journal: World Academy of Science, Engineering and Technology on 6-9-2024.