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THE ELECTRIC SUN

According to the tradition, astronomy of the last century was based on electrically neutral celestial bodies. This tradition was not emphasized, not stated only silently supposed. The electric force was taboo for professionals and free for travellers with light-velocity and for other dreamers.

However, physics knows two forces of infinite radius: gravity and electricity. The Sun works with both. To emphasize the new discovered electric functions, the title of this paper is “The Electric Sun”. (The solar gravity was discovered by Newton more than 3 centuries ago.) The solar electric function is necessary to explain the solar wind, the corona, the flares and mass ejections i.e. every matter which leaves the Sun. www.electric-universe.de

NEGATIVE EMISSION: THE SOLAR WIND

- The solar wind is a “grey mouse” among the solar mass emissions. Its main particles are the light electrons, it is not dangerous for satellites or humans in space, it is invisible, it alone cannot cause aurora, it is almost constant. But it is the motor of all solar electric functions e.g. of all ejections and of the magnetic field of the sunspots.
- The solar wind is the result of the asymmetric thermal motion of the electrons in the Sun. A random flight outwards brings the electron in a colder proximity (i.e. its velocity becomes lower). Therefore, the return into the original position is improbable i.e. all electrons drift outwards. Naturally this drift is very small, but has enormous cross section in the whole Sun. The free path of an electron is short and the electron would need an impossible long flight of 100m outwards to get its proximity colder than 2K (= 0.1ppm).
- The Sun does not loose all of its 10^{57} electrons at once only about 10^{39} electrons daily. It is negligible. The whole solar life is 10^{10} years which is 365 x10^{10} days i.e. the Sun would have lost 10^{57} : 3 x 10^{51} part of its electrons i.e. only 0.003% of its electrons. This value is a limit without taking the positive emissions (e.g. flares) into account.
- The protons are 43-times slower due to their 1836 times higher mass and mostly remain in the core. Always the quickest electrons are lost for the solar core, this process cools the Sun but all activities have their energy from this separation of the electric charges via this so called “thermoelement-effect”.
- Also the neutrinos from the solar core push the electrons outwards, never inwards.
- Moreover, solar photons push the electrons stronger outwards than inwards.
- **The result is that the solar surface will be basically negative, the solar core positive.** (Eddington 1925).
- The negative charge continually explodes electrically in the photosphere as solar wind which never stops. The emerging electrons have a free space upwards. They will not be cumulated. Its very high velocity of typically 750km/s would need 24million Kelvin to be emitted thermally! But the solar surface is only 6000K hot. Therefore, the solar wind can only be an electrostatic continual explosion. The electron concentration in the photosphere is constant because the thermoelement-effect only depends on the temperature-difference between core and surface and this is constant 15MK. All electrons which drift into the photosphere will be exploded.
- When the Sun is in minimum activity, the whole solar surface emits the solar wind. Therefore the whole solar surface is negative and black in ultraviolet light or X-ray. The satellites measure a constant wind-velocity of 750km/s in solar minimum.
- The solar wind mainly contains of electrons and some swept away protons and other ions. These all have the same 750km/s velocity. Related to the protons, the oxygen ions do not have a 4 times lower velocity according to their 16 times higher mass (as in a thermal equilibrium). The ejection of the solar wind is a non-thermal process.
- The solar wind is no plasma it is a non-thermal (filamentary) body (it is in a fifth state of matter). These filaments are clearly detected by satellites and are visible in the aurora.

THE POSITIVE EMISSIONS: CORONA, FLARE AND CORONAL MASS EJECTIONS

- The positive charge of the solar core increases with each electron which leaves the Sun for ever in the solar wind. The positive charge is cumulated.
- The emerging positive charge is higher concentrated if it is originated from solar volumes of higher thermal gradient. The flares come from the border of the solar core.
- 11-yearly, positively charged matter appears on the solar surface (as "footpoints") via mechanical instability. Its concentrated charge overbalances the electrons and emits itself into the space **as prominences, positive filaments, corona, flares, mass ejections according to their charge-concentration**. This positive matter from the depth contains ions and no mysterious heating produces these ions. The ions produce the filaments and not the filaments the ions. No heating of the corona should be found. The corona is not heated! (Fifth state of matter)
- When positive matter emerges into the photosphere, the photons fly free in the transparent gas and the matter electrostatically explodes. These are the footpoints. These exploding protons ionize matter; low and highly ionized atoms come into existence. The accidentally produced e.g. Fe^{+2} –ions are emitted by the positive footpoint into a prominence or chromospheric net but the e.g. Fe^{+9} –ions fly in the filament of a corona into the altitude of 15 Mm; Fe^{+14} – ions up to 200 Mm.
- Also the motion of matter in the filament should not be found. The motion is caused by electrostatic repulsion. The pinch effect of the moving positive charge causes the filament. The filament does not cause somehow the motion but the motion causes the filament. Without electric charge no motion and without motion no pinch effect would be possible.
- A "magnetic motion" is impossible because the Lorenz force is zero in the supposed "magnetic tube" of a filament. The solar dynamo was not found by SOHO.
- An emitted filament contains the same e.g. Fe^{+9} -ions from begin at the footpoint up to end of the coronal filament in the photosphere. Along this filament, it contains no follow of ions like:

  Fe^{+1}-, Fe^{+2}-, Fe^{+3}- …. Fe^{+9}-ions

  as if it would be heated up from 6000K to 1 MK!
- The high velocity of matter in the filament of e.g. 1500km/s would need 96million Kelvin to be emitted thermally. Naturally this temperature is nowhere on the Sun.
- Also these positive emissions are of no plasma, they are in the fifth state of matter.

Why do the core-ions not explode electrically when they loss "their" electrons? Already 0.001g protons which do not have electron-partners could explode the Sun theoretically because the electric repulsion between protons is 10^{36} times higher than their attraction by gravity. The mass of the Sun is 10^{33}g i.e. 1 gram of protons in excess has 1000 times higher repulsion than attraction. The answer is to find in the plasma. Through plasma, the electric forces seemingly cannot act. The photons of these electric forces cannot pervade the solar plasma. During a coronal mass ejection the Sun emits up to 10 billion tons of charged matter not only 0.001g. Therefore, the Sun contains big negative and much bigger positive charges in its body conserved. These move only mechanically e.g. rotated in a sunspot (GE Hale 1913 and NASA 2001) but not conducted in lack of the electric field.

MAGNETIC FORCE OF INFINITE RADIUS?

Astrophysics of the last century preferred the magnetic force. The magnetic force is also carried by photons which cannot pervade solar plasma, but the magnetic force was no taboo for astrophysicists.

The electric force has infinite radius. A positive Sun would repulse a proton in an empty space without limit. But does the magnetic force do the same? An infinite long dipole repulses an infinite long dipole infinitely. And how does the Sun (of a dipole of 1.4 million km) function?

The magnetic force originates by dipoles which attract or repulse other magnetic dipoles. But the magnetic force is unable to move a cloud in a long way in the empty space even if this cloud is a dipole. In free space, one dipole

cannot repulse

another dipole far away because the non-fixed dipole (the cloud) will rotate by 180° in a certain distance and be attracted to the fixed dipole.

A dipole

cannot attract

other dipole from fare away, because the mutual attractions and repulsions between the poles are the same. Therefore, only an electrically charged celestial body can repulse a filament of positive ions for millions of kilometres or even for lightyears (e.g. in a jet).

The magnetic force has only finite radius because the lengths of the attracted or repulsed dipoles are finite.

The Sun emits particles up to 99.99% light velocity, therefore, all explanations via moving magnetic fields or heat of a temperature of the corresponding 10^{12} K are impossible. (In the last years such high velocity was named: non-thermal velocity.) We can see that

the numerous solar magnetic fields can only be the results of the solar electric charge in motion.

Moreover, the electric cause of these magnetic fields was not clear in astrophysics. These magnetic fields cannot be the cause of any outwards motion of solar matter. Only the electric force remains to explain the ejection and the filament-form of the solar matter like the solar wind, coronal mass ejections and flares.

THE HUNTED MAGNETIC SOLAR DYNAMO

Only the solar gravity was completely understood by the astrophysics of the last centuries (since Newton, since 1666). A fine adjustment was given by relativity in the first decades of the last century. However astrophysics of the last century used the magnetic force without success in hundreds of models. Some of them are as follows:

- the existence of the solar wind (the surface should be 24MK hot to emit this wind thermally),
- the million Kelvin hot corona which does not radiate heat and cannot be heated by the solar surface of only 6000K,
- the quick release and the almost light-velocity of the proton-flares,
- the ejected solar masses which never return
- many other old observations as the solar cycle and change of the solar poloid field
- the strongest magnetic field of the sunspots is never source of a filament or eruption.

All these and many other observations persistently remained unexplained. Many solar processes were sophistically and symbolically explained by magnetic fields of mysterious origin. Prof. K. R. Lang hoped in1995 that SOHO will find the solar dynamo:

"…one of the principal motivations for helioseismological studies has been a desire to constrain theories for the solar dynamo that produces the magnetic cycle of the solar activity…"

Lang wrote disappointed in 1996 when SOHO did not find the solar dynamo:

"Our new views…have raised many questions. They include… a crisis in the dynamo theory…the unknown mechanisms that heat the million degree corona and accelerate the solar wind."
22 problems of astrophysics of the last century can be found under the collection of cited astrophysicists:
http://www.brox1.demon.co.uk/sun2.htm

However, all these problems probably have a common cause: the Sun was seen as an electrically neutral body. It is high time to test whether the Sun has an important electric function, too. This electric function seems to have a strong influence on our climate (electric climate) and, therefore, it has an enormous importance for mankind.
A thought experiment should show this:

CAN GRAVITY AND THE ELECTRIC CHARGE SCREENED?

What happens if a small body falls into the Sun? Such a body could be a small star e.g. a "white dwarf". These can have more mass than the Sun (by 40%). Let us think that this small star has the mass equal to that of the Sun. The result can be that the solar core will have in its centre a hard and heavy component, much denser than the very dense solar core.

Nobody thinks that the white dwarf – as big as the Earth – could not attract all planets through the 700000km thick solar body which has its own big mass. It is quite clear, that the double of the new solar mass would produce a double of attraction by the higher gravity and our Earth would approach the new Sun in a spiral as long as its centrifugal force will not be double than now. (In the reality, the Sun could not survive the collision with a white dwarf. Fortunately it is only a thought experiment.)

However, very probably, a white dwarf is positively charged because it has a strong magnetic field up to 1000 Tesla - which could be the result of the quickly rotated electric charge. **Is the positive charge of this thought central white dwarf detectable at Earth similar to the thought double strength of gravity in the case above?** Would the electrons of the solar wind attracted by this positive charge which is in the centre of the Sun? The probable answer is: no, a positive charge in the depth of the Sun could not be detected at Earth. The solar plasma is not transparent for photons which are the carriers of the positive electric field. This field starts at the positive surface of the white dwarf. Many observations show that **gravity can pervade plasma but the electric force cannot pervade plasma**.

Already 0.01gram of protons in excess would explode the Sun if the electrostatic repulsion could pervade the solar plasma! But the Sun is still there. Either, the Sun is totally balanced in its electric charges. It should have neither positive nor negative overbalance even not in milligram-range for the positive charge or microgram-range in electrons. The other possibility is that it is not sensitive if its electric charges are unbalanced. But the Sun cannot be balanced! Already before it was born, the mother-cloud was bombarded by the cosmic rays giving positive charge to it. Also young stars in the proximity emitted X-rays which ionized hydrogen and helium of the mother cloud i.e. many electrons could not return after their emission by these photons. However, positive masses of billion tons are emitted in coronal mass ejections daily and not milligrams.

GRAVITY AND ELECTRICITY

There are many differences between the two forces of infinite radius. The problems of the astrophysics of the last century have their origin in the fact that these differences were neglected. Moreover, the electric force of infinite radius was looked at as having short radius acting only in atoms. Positively charged atoms existed, but positively charged stars should not exist. Following table shows the two forces of infinite radius.

IDENTICAL CHARACTERISTICS OF FORCES OF INFINITE RADIUS:

	GRAVITY:	**ELECTRIC FORCE:**
Maximal velocity:	300 000 km/s	300 000 km/s
Action radius:	Infinity	infinity
Can attract?	Yes	yes
Proportional to “charges”?	Yes (M x m)	yes (C x c)
Law of distance:	R^{-2}	R^{-2}
Waves?	Yes	yes
Can act in empty space?	Yes	yes

DIFFERENT CHARACTERISTICS OF FORCES OF INFINITE RADIUS:

	GRAVITY:	**ELECTRIC FORCE:**
Can escape from black hole?	Yes	no
Can repulse?	No	yes
Secondary force	No	yes (magnetic force)
Velocity < 300 000 km/s?	No	yes
Can pervade plasma?	Yes	no (21^{th}century)
Number of “charges”?	one	two (+ and -)
Zero force of a body?	impossible	possible (if neutral)
Force typically produces:	stars - galaxies	filaments, jets
Force typically forms:	Ellipsoid	cylinder
Color of these bodies:	infrared up to blue	X- and gamma-ray

Produced bodies are in	concentration	expansion
State of matter of bodies:	thermal (solid, fluid, gas, plasma)	non-thermal (filament)
Force between 2 protons:	1 unit (very weak attraction)	10^{36} units (very strong rep.)
Force is important in atom:	no	yes
Space is deformed by it:	yes	no

As we see the two forces of infinite radius are in their many characteristics different. Therefore, it is possible that the Sun exactly shows us the mass of its core but keeps in secret the positive charge of its core.

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