Energy From The Vacuum

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Abstract

Existing technology is extended with reasonable modifications to show that energy can be borrowed from the vacuum and used for a period of time before being repaid to the vacuum.

Physical laws are proposed to reside in the vacuum of space and be enforced by the vacuum energy. Fundamental principles are found in Schrödinger's writing to govern the collection of energy in non-random systems.

Introduction

Since about 1860 scientist have speculated about what energy the vacuum of space contains and how it might be used. A number of inventors asked for money to support this type of research, none of which have succeeded in public view or returned a profit to the investors. A fringe area of private researchers continues to promote the ideas about free energy, while asking for money and attempting to sell books. Main stream science lost interest in free vacuum energy around 1900 as conservation laws were developed. General Relativity claims that there is nearly zero energy in space, while Quantum Mechanics claims the vacuum energy approaches infinity.

Much has been learned about the physical laws, but little is known about where the laws reside in nature and how they find expression in actions. Since the laws and constants appear to be nearly the same almost everywhere, it is proposed that the laws and constants reside in the vacuum of space and the Dirac Sea of Energy enforces the laws. Then if the energy is taken for other use, it must be repaid promptly to avoid change of the physical laws. In general the vacuum finds a way to collect the overdue loan by altering some aspect of the physical system that failed to repay on time.

Heisenberg Uncertainty principle governs the lending and collection of vacuum energy, as well as the time allowed for repayment. Schrödinger used the Third Law of Thermodynamics in his book (1) to claim that a system like DNA dominated by non-random actions could promote a decrease of entropy in a local space, departing from the conventional statistics of increasing disorder. The Second Law of Thermodynamics applies to most other systems where random processes prevail.

In this present work the vacuum energy is considered to be large but finite, and partitioned into different types of energy in nearly equal amounts that counteract each other in curvature while enforcing the physical laws. The partition provides a way to put an upper limit on vacuum energy in quantum mechanics.

Money is not requested for this work and books are not offer for sale, although books are published on the topics and copies are occasionally given as gifts. The writer believes that people who understand the subject of vacuum energy should not need to sell books, attend conventions, give speeches, or ask for money.

Radiant Focusing

The easiest device to understand and construct is a parabolic reflector that focuses low temperature background radio noise to a hot spot target, while no work is done on the system and no part of the energy is discharged to a domain that is at lower temperature than the source. Therefore the Second Law of Thermodynamics is not applied, but the Third Law of Thermodynamics governs the action. Anyone can do this, and it has been demonstrated in a children's museum in San Francisco, California.

The focusing device is an example of Schrödinger's non-random devices. At room temperature the maximum possible power is about 360 watts per square meter of reflector, but usually less because of efficiency factors. That's why it isn't used more often as a power supply.

Dark Current In Diodes

Electrical engineers are taught that circuits containing diodes or solar cells have a small but detectable current flowing in the dark when no power is supplied to the circuits. Design of digital cameras and television sets must compensate for the dark current by providing a reverse voltage to counteract the tendency of stray electrons to flow in one direction through the diode junctions.

Again the total power is small. To meet the one watt challenge of Harold Puthoff with diodes in a DC circuit would require about 700 stacks of diodes with 500 diodes in a stack, or about $35,000 worth of electronics to win a $10,000 prize.

Polarizing the Vacuum

Published experiments have shown that electrons and positrons are produced from the vacuum when it is saturated with electric or magnetic energy. When the fields are created from electric power, the resulting gamma ray energy is said to be derived from the electric power supply. If permanent magnets provide a substantial part or the entire field, it can be argued that some part of the gamma energy has been borrowed from the vacuum.

It can be shown that magnetic saturation (B_s) is easier to do than electric saturation (E_s) where c is light speed.

$$E_s = c\ (B_s)$$

Much is published about electric break down of the vacuum. It is said to occur at the Schwinger Limit of Electric field strength.

$E_s = 1.3*10^{18}$ volts per meter.

Equivalent magnetic field is easier to generate,

$B_s = 4.3*10^{9}$ volt seconds per square meter.

Fields of permanent magnets are not usually this strong, especially in vacuum space where launch weight is limited. Flux forcing can be used to intensify the fields in a saturated region.

Inside magnetic metal it is possible to generate the necessary break down field with flux forcing. It means there is a small fraction of a square meter of cross section in the break down zone, and a much larger fraction of a square meter cross section in the driving magnet. Vacuum space becomes polarized to the break down limit between atoms of metal. Gamma energy can be harvested from the vacuum, but more efficiently inside the metal.

The permanent magnet design is interesting as a demonstration that the device starts without external energy supplies. In vacuum space the field strength is shown with a low efficiency.

$$B = \mu * (H)$$

The field is intensified inside the metal where $\{ M \approx 1000*H \}$.

$$B = \mu * (H + M)$$

For better power to mass ratio an AC component is added, but biased such that the AC field does not reverse polarity in the permanent magnets. In other words part of the gamma energy feeds back to intensify the polarizing field.

$B = \mu * (H + M) + B_o * [1 + \text{sine}(\omega t/2\pi)]$ with angles in radians.

In space it is probably possible to harvest gamma energy by break down of the vacuum on the end of a long boom, and with fairly well known technology.

The best know device to collect the gamma ray energy is an array of solar cells in the radiation zone. Each gamma ray can liberate up to one million electrons in the solar cell array, many of which cross the semiconductor junction by random action, but cannot return. A drift current occurs in one direction.

This example is very much like the device associated with Karl Schappeller in Austria 1925 to 1938, except the solar cells make a more efficient collection system and the starting battery is eliminated by flux forcing. From Schappeller's writing it seems unlikely that he invented the device, since he was ignorant of the scientific principles that govern it. More likely Schappeller purchased the device in an estate sale along with the castle he lived in using a down payment of money borrowed from his father. The inventors probably died from radiation or war. Schappeller was able to operate the machine as part of a fraud, but was probably not able to duplicate the electret and the ceramic parts. Three engineers inspected Schappeller's device and wrote report that said it was genuine.

Polarizing the Diodes

Diodes are much easier to polarize than the vacuum of space, and don't require the production of gamma rays. It is possible to polarize a stack of diodes with a system of permanent magnets and biased electromagnets to intensify the dark current.

In this situation the energy gain may come from local heat instead of the vacuum of space. If the diodes get cold they must be protected from short circuiting caused by contact with condensed water.

Conclusions

Energy can be borrowed from the vacuum of space and used for a period of time according to Heisenberg Uncertainty before being repaid to the vacuum.

The vacuum contains a large but finite amount of energy that is fully occupied for enforcing the physical laws. The energy is partitioned into different types that satisfy the curvature of General Relativity, and put a finite limit on the amount of energy in space.

Production of energy in biasing of fields is a fundamental principle, governed by the Third Law of Thermodynamics as applied by Schrödinger in non-random devices.

Some examples have been given to demonstrate the principles of this work. There are other possible non-random devices. In all of these devices the vacuum energy is a loan that will be repaid one way or another.

Vacuum Energy is more like Internal Energy than Free Energy, because the energy is fully committed to enforcing physical laws.

References

1) Schrödinger, What Is Life, Cambridge University Press, Cambridge, 11th printing, 2004. Pages 72-73.