How the Searl Effect Works:
An Analysis of the Magnetic Energy Converter

Paul A. LaViolette
The Starburst Foundation

June 17, 2001

Explaining the Energy Generation Effect

The Magnetic Energy Converter (MEC) constructed by Vladimir Roschin and Sergei Godin is a version of the Searl Electrogravity Generator. Its construction and operation have been described in previous publications.[1, 2] Here we will investigate how the device powers itself and how its operation causes it to lose weight.

The MEC consists of a magnetized stator cylinder (B field pointing down), surrounded by a ring of roller magnets (B field pointing up); see Figure 1. The rollers are rotated by the ball-bearing motor effect which in turn draws its energy from two processes operating in parallel:

1) The Faraday disk dynamo effect, wherein the circumferential movement of the roller magnets generates a radial current,

2) Entrainment of environmental energy through phase-conjugate resonant coupling.

We will examine these effects in sequence, beginning with the first.

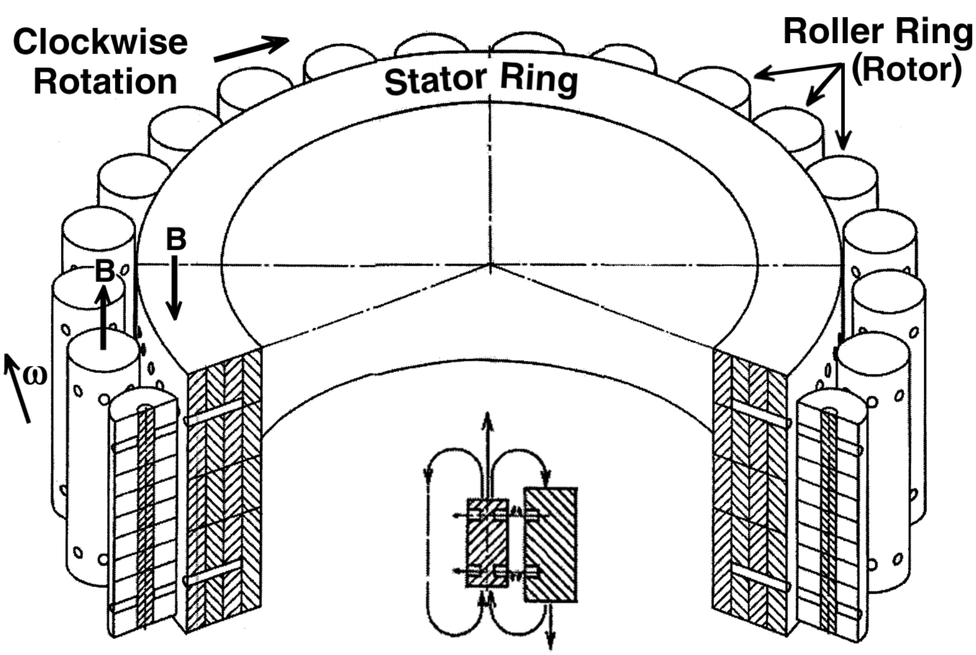

Figure 1. The Magnetic Energy Converter (based on the drawing by V. Roschin and S. Godin (2000). As they roll, the roller magnets displace around the circumference of the ring shaped stator magnet.

The Faraday Disk Dynamo Effect

The clockwise displacement of the ring of magnetized rollers (clockwise as viewed from above) generates a radial current that induces electrons to flow outward from the central stator ring to the roller ring and on outward. This may be explained by the $v \times B$ rule. In addition, each of the 23 magnetized rollers behaves as a Faraday disk dynamo as it rotates. As such, its clockwise rotation, with north magnetic pole pointing upward, generates a radial current in which electrons from the periphery of the rollers flow radially inward toward the center of the adjoining stator ring. Thus these two electrical induction effects oppose one another, one inducing an electron flow from the roller center toward the stator ring and the other inducing an electron flow directed radially outward from the surface of the stator ring.

To determine the dominant direction for electron flow, we must calculate the voltages developed by each mechanism and sum them together. Tom Valone has suggested that the voltages produced by both induction mechanisms may be estimated by the same equation applicable to a Faraday disk dynamo:[3, 4]

$$V = \tfrac{1}{2}\omega B(b^2 - a^2)$$

where ω is the angular velocity of the dynamo and b and a are the outer and inner radii of the rotating magnet. In the case of the individual rollers, b = 0.037 m, the diameter of the rollers, and a = 0.005 m, the central shaft hole. When the ring is revolving at 600 rpm the individual rollers will be rotating 13 times faster, hence $\omega = 13 \times 600/60 \times 2\pi = 817$ rad/s. Taking B = 1 Tesla, V = 0.55 volts.

The voltage generated by the displacement of the roller ring may be estimated by this formula by considering the ring of roller magnets as one large Faraday disk dynamo, its outer radius being b = 0.574 m and its inner radius being a = 0.5 m. Rotating at 600 rpm, or at an angular velocity of $\omega = 62.8$ rad/s, it would generate a voltage of 2.5 volts. Consequently, the outward electron flow produced by the displacement of the roller ring would dominate the inward electron flow induced by the individual rollers, the net radial voltage being about 2 volts. Given that the rollers are composed mostly of Neodymium a 7.4 cm diameter roller would offer a resistance of 460 $\mu\Omega$, supporting a maximum current flow of 4300 amps or a power flux of 8.7 kw.

Due to the repulsive force induced between the magnetic pegs in the rollers and stator ring, the rollers will not touch the stator ring. Nevertheless since the air is kept ionized by a high voltage field, electrons are able to flow from the stator to the rollers via the surrounding ionized medium.

As this outward radial electron flow passes into the rollers, it generates a circumferential motive force on the rollers that assists their rotation. This conversion of radial current flow into circumferential torque is known as the ball bearing motor effect.

The Ball-Bearing Motor Effect

The ball-bearing motor effect is described by M. Gubrud in Tom Valone's book, *The Homopolar Handbook.*[5] A brief summary is presented here. The ball-bearing motor, shown in Figure 2, is powered by applying current between a central shaft and the outer cylindrical race, conducted through an intervening ring of ball bearings. When the shaft is given an initial torque, it continues to rotate in the direction of the applied torque, provided that current is continually applied to the motor. Figure 3 illustrates how torque forces develop on the individual ball bearings and keep them revolving. A ball bearing magnetized at time t =1, will retain a residual field in this same magnetization direction at time t = 2 even though it has

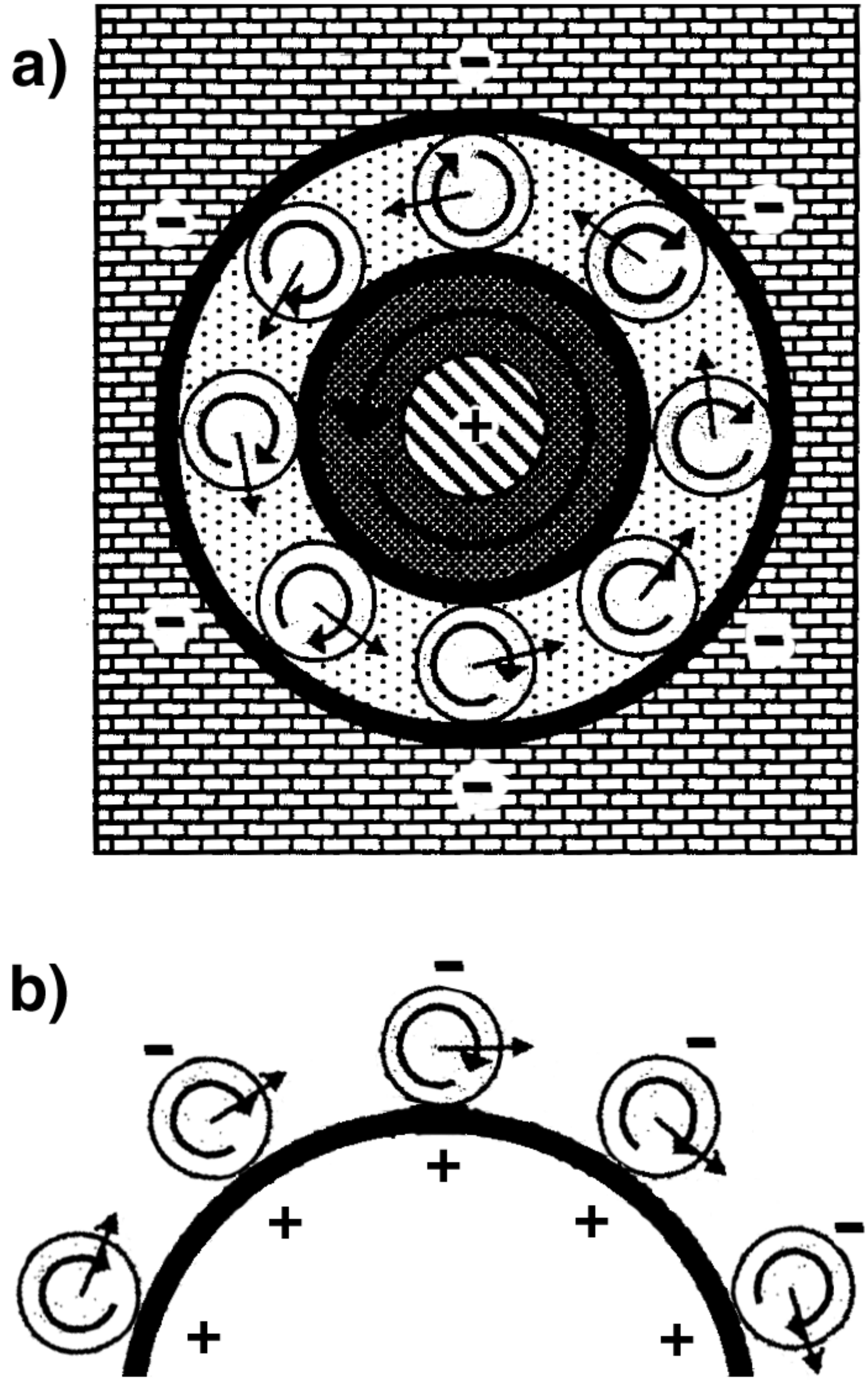

Figure 2. a) The ball bearing motor (after M. Grubud, in T. Valone, *Homopolar Handbook*, pp. 54 – 55). The central shaft rotates relative to a stationary cylinder. b) Lower portion of the above diagram unfolded to show equivalence to the geometry of the roller magnets traveling around the MEC stator. In each case electron flow moves from stator to bearing (or roller). Charge polarity in (b) is reversed since the MEC functions instead as a generator, electron flow inducing charge build up rather than applied charge inducing electron flow.

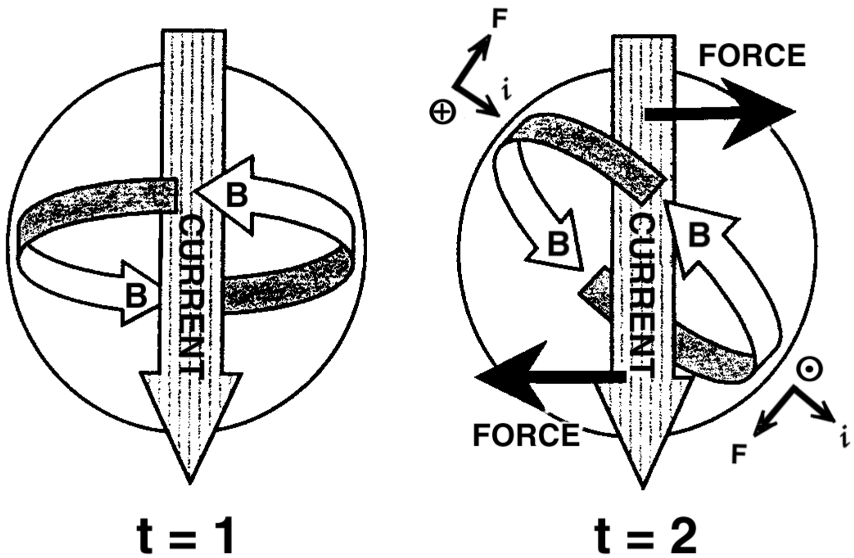

Figure 3. A ball bearing shown magnetized at time t =1, retains a residual field in that same direction at time t = 2 even though it has rotated (based on drawing by M. Grubud in T. Valone, *Homopolar Handbook*, pp. 54 – 55). Vector diagrams show clockwise torques developed by i, the current component lying in the plane of the B field.

rotated. The component of the current perpendicular to this field will produce torques on either side of the ball which assist in keeping the ball revolving.

A Motor-Generator Feedback Cycle

Together, these two processes, the Faraday disk dynamo effect and the ball bearing motor effect, form a positive feedback loop in which roller ring displacement produces electric current which, in turn, produces roller rotation and ring displacement; see Figure 4 (upper left). Based on previous experience with Faraday disk generators (De Palma, Trombley, Marinov, Valone), we may conclude in the case of the MEC that the electrical power generated by the circumferential displacement of the roller magnets is insufficient to overcome losses due to mechanical friction, electrical resistance, and back torque. Consequently Roschin and Godin found it necessary to apply mechanical torque to the MEC to keep it going when its roller ring was revolving at low rpm. Nevertheless, in spite of its inherent resistive losses, they observed the roller ring to spontaneously accelerate once its rate of rotation exceeded 200 rpm (3.3 cycles/s). This suggests that the apparatus must have been receiving additional energy input.

Energy Entrainment

As is explained below, this additional energy most likely was being entrained from the immediate vicinity of the MEC, and was assisting the roller ring's movement around the stator ring. This energy entrainment hypothesis finds support by the observation that during its operation the MEC established a series of concentric cylindrical "magnetic walls" around its stator ring; see Figure 5. These were spaced from one another by approximately 0.5 to 0.6

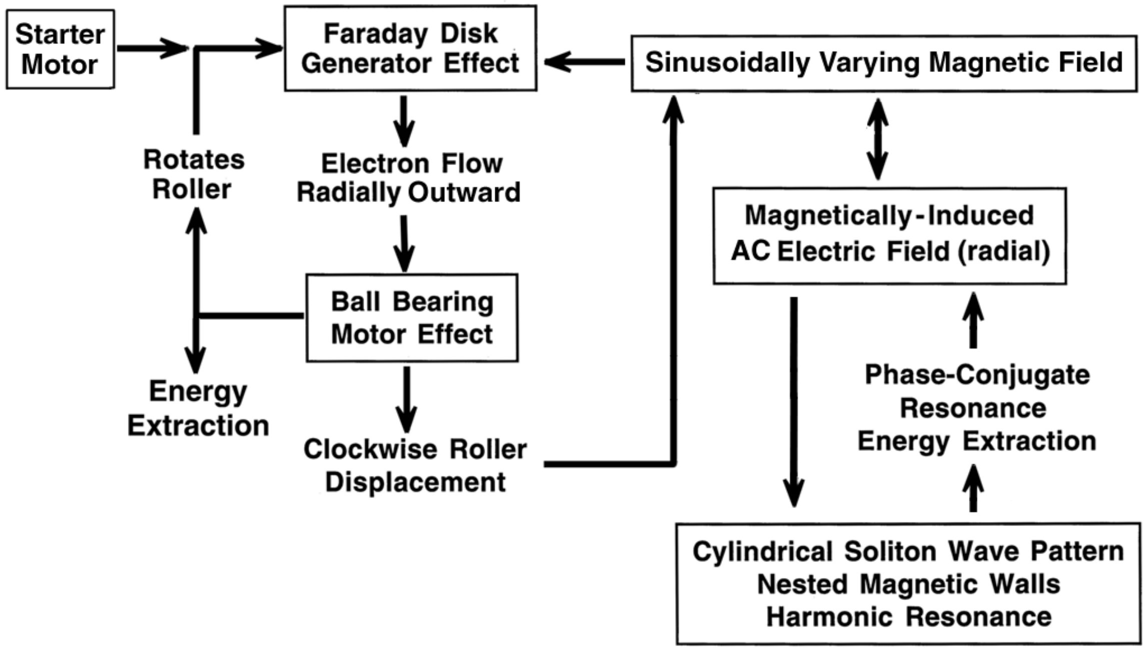

Figure 4. An energy flow analysis of the MEC (P. LaViolette).

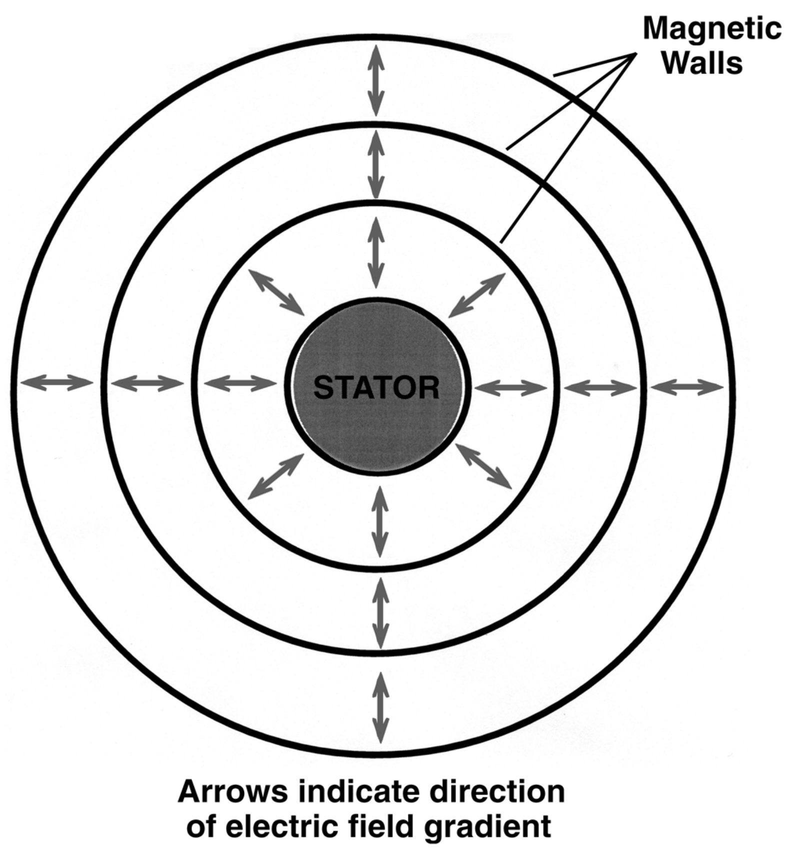

Figure 5. Top down view of the layout of the cylindrical magnetic walls which together formed a stationary wave pattern around the MEC stator ring.

meters, the radius of the roller magnet ring rotor, and had a thickness of about 5 to 8 cm, approximating the 7.4 cm diameter of the roller magnets.[1] The proximity of these dimensions to that of the roller magnet ring and the observation that the air temperature within the walls decreased in proportion to the rate of roller ring rotation led Roschin and Godin to conclude that there was a direct connection between this stationary field pattern and the circumferential movement of the magnetic roller ring. In particular, in view of the correlated temperature drop, reaching -7½° C for a roller speed of 550 rpm, they concluded that energy from the environment was somehow being transferred to the roller ring assembly to assist its rotation.

Here we will attempt to explore how this magnetic wall pattern is generated as well as how energy from this field pattern might be entrained into the roller magnet ring. As the roller magnets travel clockwise around the stator magnetic ring, they generate an oscillating magnetic field in the stator's frame of reference. That is, as a roller passes a given reference point just outside the circumference of the stator ring, in the stator reference frame the magnetic field strength increases to a maximum since the roller and stator magnetic fields add to one another. Then, as the roller continues its clockwise motion and departs from that reference point, the magnetic field strength reaches a minimum since the roller and stator magnetic fields act to cancel one another. As a result of this motion, the magnetic field in the stator reference frame sinusoidally varies in magnitude, *without reversing its direction*; see Figure 6. Since the diameter of the roller magnets, D, and the space between the roller magnets, k, is approximately the same, the rotary displacement of this succession of equally spaced roller magnets will set up a resonant oscillation in the stator reference frame. This time-varying B field, in turn, induces a radially-directed E field which alternately reverses in direction with the passage of each roller. The E field wave form should be somewhat triangular in shape since it is produced by a B field that varies in strength.

It is important to note that this AC electric and magnetic field oscillation is induced in an electrically *nonlinear* medium. That is, the ferromagnetic material making up the stator and roller magnets have nonlinear electrical and magnetic properties. In addition, Roschin and Godin exposed the periphery of the roller magnet ring to a 20,000 volt electric field which would have surrounded the stator and roller ring with nitric oxide which also has nonlinear electrical properties. When excited with an AC field, a nonlinear medium of this sort produces a stationary wave field pattern (soliton) composed of an ordinary wave superimposed with counterpropagating phase conjugate of that same wave.

To understand how such a wave pattern would form, consider the operation of a phase conjugate resonator in which a laser beam passes through a wave-scattering medium and where the resulting scattered light beam, the "probe" beam, enters a "mixer" containing a nonlinear dielectric medium such as an electrically polarized crystal of barium titanate.[6-8] This probe beam (1) will excite two counterpropagating "pump beams" (3 and 4) to build up between mirrors placed on either side of the nonlinear medium; see Figure 7. These pump beams interfere with the probe beam to produce a stationary periodic electric field and refractive index pattern in the nonlinear medium called a "holographic amplitude grating." Once formed the grating refracts the incoming ordinary electromagnetic waves of the probe beam to produce an outgoing phase conjugate beam (2) that is the phase conjugate of the probe beam (1). This phase conjugate beam precisely retraces the path followed by the probe beam (appearing as though the probe beam was moving backward in time. The ordinary waves of the probe beam and the synthesized phase conjugate waves phase lock together to produce a combined wave pattern whose field potentials are stationary in the apparatus reference frame, although the electromagnetic waves forming the individual component beams (ordinary and phase conjugate beams) are each travelling at the speed of light. Such stationary wave patterns are often called *solitons* since they are formed through nonlinear

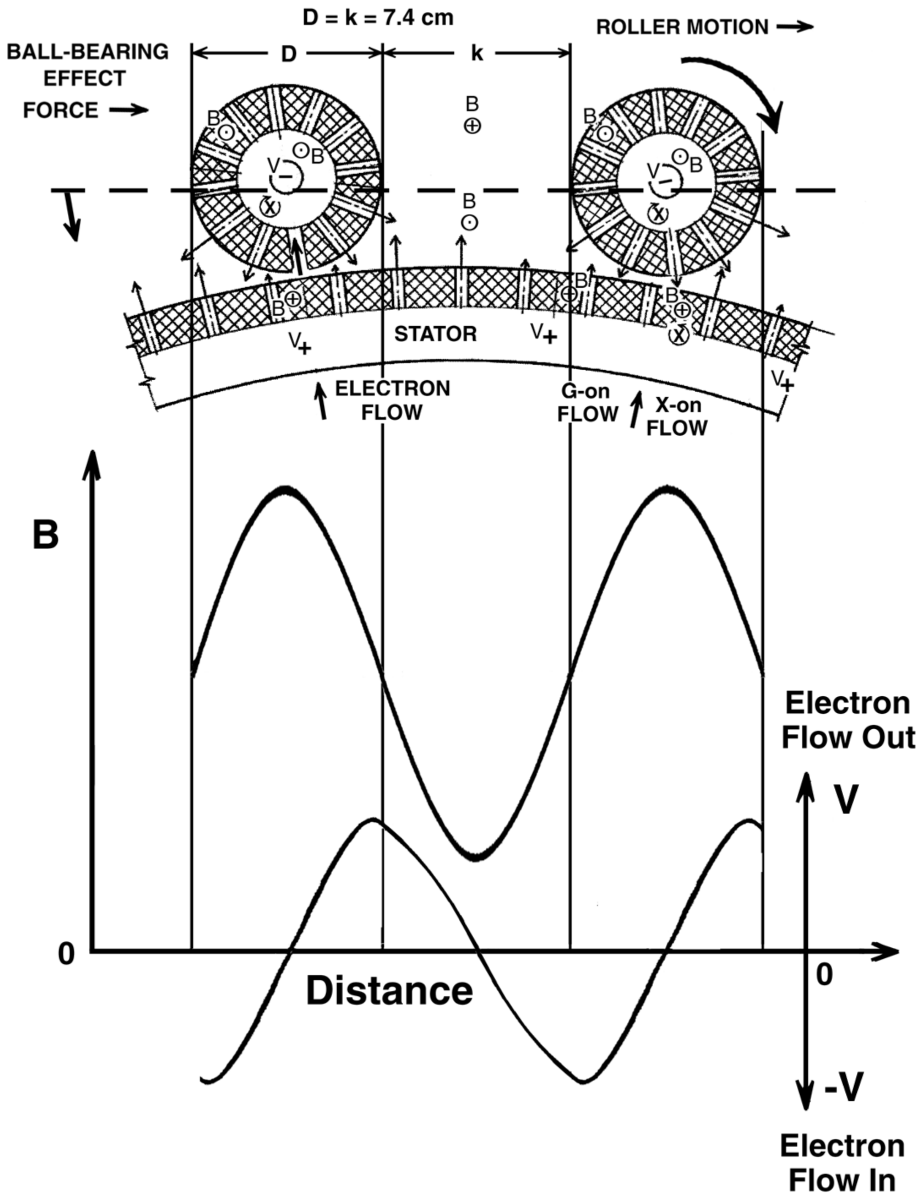

Figure 6. Resonant variation of magnetic field strength (B) and electric field potential (V) in the stator reference frame excited by the circumferential displacement of the roller ring.

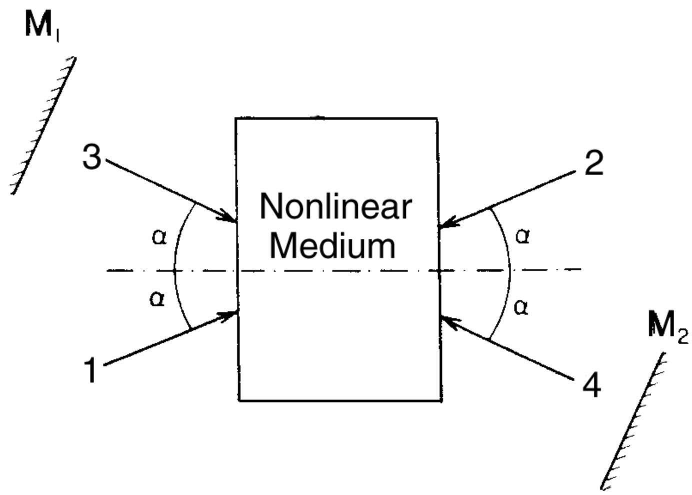

Figure 7. A passive phase conjugate resonator showing incoming probe beam (1), outgoing phase conjugate beam (2), and pump beams (3 and 4) reflected by mirrors M_1 and M_2.

wave interactions, thereby distinguishing them from linear, standing wave patterns.[9] Phase conjugation may also be made to occur in the audio frequency range in electrical circuits.[10]

The oscillating, non-reversing magnetic field produced around the circumference of the roller magnet ring in the stator reference frame would, in an analogous fashion, induce an ordinary AC electromagnetic wave to propagate radially outward form the stator ring in the stator reference frame in the plane of the stator. Through nonlinear interactions, this could form a phase conjugate wave that would propagate radially inward, these ordinary and phase-conjugate waves interlocking to form a soliton having E and B field components. Rather than working with a linear wave propagation geometry, as in the case of the directed radiation beams of the optical phase-conjugation example considered above, this case involves a cylindrical wave propagation geometry with wave fronts moving radially outward and inward from the center of the stator ring.. With 23 roller magnets, revolving at 600 rpm, the induced fields would be oscillating at 230 Hertz. In the vicinity of the roller ring, the B-field component of this soliton would move with the roller ring. There would be 23 B-field cycles positioned around the circumference of the ring, the soliton B-field maxima aligning with the magnetic field maxima of the roller magnets and the whole pattern moving around the stator ring in synch with the revolving roller magnet ring.

One interesting characteristic of the phase conjugate resonator is its ability to decrease the entropy of an oscillating system. For example, in the case of optical phase conjugation considered earlier, the entropy of the wave system forming the incoming probe laser (or maser) beam would progressively increase as a result of wave scattering processes. This entropy increase, however, would be completely compensated for by the emission of the phase-conjugate beam. That is, the phase conjugate waves would precisely retrace the path of the scattered ordinary waves, causing the entropy of the wave system to decrease back to its original state. Experiments have shown that the counterpropagating pump beams can self-excite to intensities 60 times that of the input signal beam *without any additional energy input*.[11,12] Higher amplification coefficients could be achieved by reducing the losses of the resonator cavity and by taking advantage of natural resonances in the nonlinear dielectric. In effect, the phase conjugate resonator bottles up the electromagnetic waves allowing them to reach intensities, much higher than the input intensities.

The same field amplification would apply to the ELF pulses produced by the MEC . In this case, the surrounding nonlinear media would cause the AC electric field pulses produced by the translating roller magnets to ramp up in magnitude. Repeated 1 volt AC oscillations which the roller magnets would generate in the stator reference frame could add to one another to produce field intensities of possibly tens of thousands of volts or more. This could explain the high-voltage effects that Roschin and Godin observed. For example, they report that when the MEC was operating, a "blue-pink glowing luminescence" enveloped the edge of the stator ring and moving roller magnet ring to form a toroidal cloud of ionization with a "characteristic ozone smell".[1] Also when looking at the edge of the rotating roller magnet ring, they saw, superimposed on this emission, a series of horizontal yellowish-white luminescent bands (4 or 5) spaced along the height of the roller surface (i.e., separated from one another by about 1 roller radius). This luminescence suggests a possible high-voltage electron discharge from the surface of the roller magnets, although it was not accompanied by sounds characteristic of arc discharge. This silent emission could be because the emission is coming from a large surface area, rather than from a point source. Roschin and Godin compare it to high-voltage microwave induced luminescence observed prior to the point of electrical breakdown. Another effect associated with nonlinear media and phase-conjugate resonators is that the soliton field that is induced tends to progressively increase in magnitude over time.

The electric field pulses produced by the roller magnet ring are similar in many respects to the high-voltage DC electric field pulses radiated from the dome electrodes of Nikola Tesla's high-voltage towers. Tesla excited his coils with abrupt high-voltage discharges spaced by brief relaxation periods. This caused his dome electrodes to radiate sawtooth shaped longitudinal waves that tended to be unidirectional, rather than AC. He too noticed a luminosity surrounding his apparatus. The extent of the luminosity progressively augmented indicating that the field around Tesla's tower was progressively ramping itself up in intensity. For example in his book *Secrets of Cold War Technology*, Gerry Vassilatos writes:[13]

> "He [Tesla] had already observed how the very air near these Transformers could be rendered strangely self-luminous. This was a light like no high frequency coil ever could produce, a corona of white brilliance which expanded to ever enlarging diameters... Unlike common high frequency alternations, Tesla radiant energy effects grow with time. Tesla recognized the reason for this temporal growth process. There were no reversals in the source discharges, therefore the radiant energy would never remove the work performed on any space or material so exposed. As with the unidirectional impulse discharges, the radiant electric effects were additive and accumulative. In this respect, Tesla observed energy magnifications which seemed totally anomalous to ordinary engineering convention.
>
> "Tesla performed outdoor experimental tests of broadcast power in the northernmost reaches of Manhattan by night. Sending metallized balloons aloft, he raised conductive lines. These were connected to the terminals of his Transformers and activated. When properly adjusted, the white luminous columns began covering the vertical aerial line and expanded by the second. Enveloping Tesla, his assistants, and the surrounding trees, this strange white luminosity moved out into the countryside to an enormous volume of space."

The nitric oxide gases generated at the surface of Tesla's electrified dome electrodes would have formed a nonlinear medium in which phase conjugation could take place and produce stationary waves through interaction with the surrounding environment. The progressive ramping up of field intensity would have been a direct consequence of this phase conjugate resonant behavior. Engineering physicist Guy Obolensky, who has observed this ramping phenomenon in laboratory experiments he has performed, refers to it as the FASER phenomenon (<u>F</u>orce <u>A</u>mplification by <u>S</u>timulated <u>E</u>nergy <u>R</u>esonance).[14]

As mentioned above, the Russian team observed that while in operation the MEC was surrounded by a series of concentric, cylindrical magnetic walls, these recurring at regularly spaced intervals as far as 15 meters from the device. At further distances the walls rapidly decreased in intensity. These vertical walls were estimated to exceed upwards 12 meters or more. They were about one roller diameter thick and their spacing which was about 0.5 m (one stator radius) near the roller ring, increased toward 0.6 m as distance from the MEC increased. Since the roller ring would be radiating longitudinal electric waves directed radially with respect to the roller ring's central axis, harmonic modes distant from the MEC would be expected to be excited. Moreover since these pulses would be directed along the ring's plane of rotation, this harmonic wave pattern would be expected to have a cylindrical geometry, rather than a spherical geometry, the cylinder axis being aligned with the axis of ring rotation. So the geometry of the magnetic wall pattern is understandable. The magnetic walls surrounding the MEC would comprise harmonic excitations of a soliton wave pattern extending radially outward from the roller magnet ring, these resonant modes being spaced from one another by a distance equal to R, the roller ring radius. Using a Hall effect probe Roschin and Godin and measured the magnetic field within the walls to be B ~ 0.05 T when the ring was rotating at ω ~ 550 rpm. The field was oriented north pole up, matching the orientation of the roller magnet fields. It should also be possible to detect an oscillating electric field in these walls, vectored radially with respect to the central stator. This should be checked out in future investigations of this device.

It is reasonable to expect that the same nonlinear interaction that forms a soliton revolving with the MEC's roller ring would also set up solitons in cavities having circumferential dimensions that are whole number multiples of the roller ring circumference. This is what is observed. The circumference of the cylindrical wall positioned nearest the roller ring is twice the roller ring circumference. The next wall measures three times the roller ring circumference, and so on. If the EM soliton field patterns within these walls rotate in synch with the roller magnet ring, their fields should oscillate at $2f_o$, $3f_o$, $4f_o$, and so on , relative to the base frequency f_o of the roller ring. There are no mathematical solutions that would allow walls to form in between these nodes since at other radial distances a whole number of oscillation cycles would not fit around the circumference. The harmonics would have real solutions coinciding only with these sharply defined cylindrical cavities. Since the roller ring is made up of 23 magnets, which is an undivisable prime number, lower frequency modes, such as $\frac{1}{2}f_o$ or $f_o/3$, at radii within the roller ring radius, would not form. The roller ring would itself be the lowest frequency resonance in this stationary wave pattern.

Although physicists are more familiar with standing wave patterns that vary in smooth sine wave fashion, periodic stationary wave patterns with sharp transition boundaries are also known to occur. For example, such sharp-edged boundaries have been observed in stationary waves produced in the laboratory with Tesla-wave type oscillations.[15]

The FASER effect produced by phase conjugate resonance should amplify not only the MEC's electric field pulsations in the stator reference frame, but also the associated magnetic field soliton pattern rotating with the roller magnet ring. Consequently, at a given speed of rotation, the B field strength of the roller ring soliton should progressively increase with time and since its field direction matches the direction of the roller magnet field, it should add to their field, increasing the net ambient field above the 1 Tesla strength of the roller magnets. The maximal amount of this induced increase would depend on the rotation speed of the roller ring, higher field strengths being achieved at higher speeds. Earlier we concluded that the circumferential displacement of the roller magnet B field induces a radial electron flow from the stator to the rollers which in turn generates a ball-bearing motor torque that aids the clockwise rotation of the rollers. Consequently, <u>the B field strength contributed by the soliton will aid the rotation of the roller ring</u>. Energy from the soliton field pattern will be continuously converted into mechanical energy, inducing the roller ring to accelerate in spite of its resistive losses. This additional energy input into MEC is illustrated by the feedback loop on the right side of Figure 4.

Since this array of magnetic wall solitons is part of a single resonance phenomenon, these resonant modes should exchange energy with one another. Hence as energy was being drawn from the inner soliton wave, it would have been replaced by energy simultaneously being drawn from the solitons in the entire harmonic set of magnetic wall cavities resonating with this base frequency soliton. If the temperature drop in the magnetic walls was a direct result of thermal energy being extracted from the air and being entrained into the soliton field, this would imply that the soliton field was somehow physically interacting with the air molecules in the magnetic walls and possibly exchanging energy with them.* Using the heat capacity of air, Roschin and Godin have estimated the total heat loss that would be occurring within the eight innermost magnetic walls, that is within a 4 meter perimeter from the center of the device. Estimating the walls to measure 12 meters high by 5 cm thick, and assuming that air within the wall undergoes a 6° C temperature when the MEC is operating at 550 rpm, they calculate a heat loss of 1.7 kcal/s, or 7 kilowatts. This slightly exceeds the 6 kw of electrical power that the device was generating due to the force that was "mysteriously" propelling the roller ring. Thus the MEC may have a clearly identifiable energy source in its immediate environment. It would be partially propelled by heat flowing into the magnetic walls from the ambient air, this energy being entrained into the soliton pattern.

If we define our system boundary as surrounding both the MEC and the magnetic walls that it creates in its environment, we find that the First Law of Thermodynamics is <u>not</u> violated. However, the Second Law of Thermodynamics <u>is</u> violated. The usual thinking is that a rotating disk should lose kinetic energy to its environment through friction and in so doing heat up the air in its environment. In the case of the MEC, the opposite is occurring; it draws energy from its environment, hence refrigerating the environment, and transfers this acquired energy to the rotating ring to speed up its motion. (The perfect solution for global warming!) Although, this may seem implausible to someone schooled in standard physics, it is commonly known that phase conjugate resonators blatantly violate the Second Law of Thermodynamics. As mentioned earlier, in producing an outgoing beam that is the phase conjugate of the incoming (ordinary) probe beam, phase conjugate resonators in fact reverse entropy.

Experiments have shown that when a laser probe beam reflects from a distant target and passes through an intervening light scattering foggy medium before arriving at the phase conjugator, the probe beam's complex pattern of scattered light will form a hologram in the resonator's nonlinear mixer medium. When illuminated with a laser, this hologram generates an outgoing phase conjugate beam whose rays precisely retrace the paths followed by the rays of the incoming probe beam, passing back through the light scattering medium, and converging precisely on the distant target. It is as though the entropy increasing process of the probe beam had been time-reversed, as if the beam's state of order had progressively increased rather than progressively decreased. This may be figuratively compared to a the pieces of a broken drinking glass reassembling themselves from the floor to form once again the original glass. The holographic refractive grating imprinted in the nonlinear medium acts as a collection of Maxwell's demons that intelligently redirect the outgoing laser light to accomplish this presumably impossible feat. Since the MEC appears to be establishing a series of soliton waves through phase conjugate resonance, we should not be surprised to find that it behaves in a way that may violate the Second Law of Thermodynamics.

---

* It is an open question whether the temperature drop observed in the magnetic walls was due to an extraction of thermal energy from those resonant cavities or whether gravitational/inertial anomalies were taking place in those cavities that caused air molecules there to become more massive (hence slow down their movement and drop their temperature). This can be established by future experimentation.

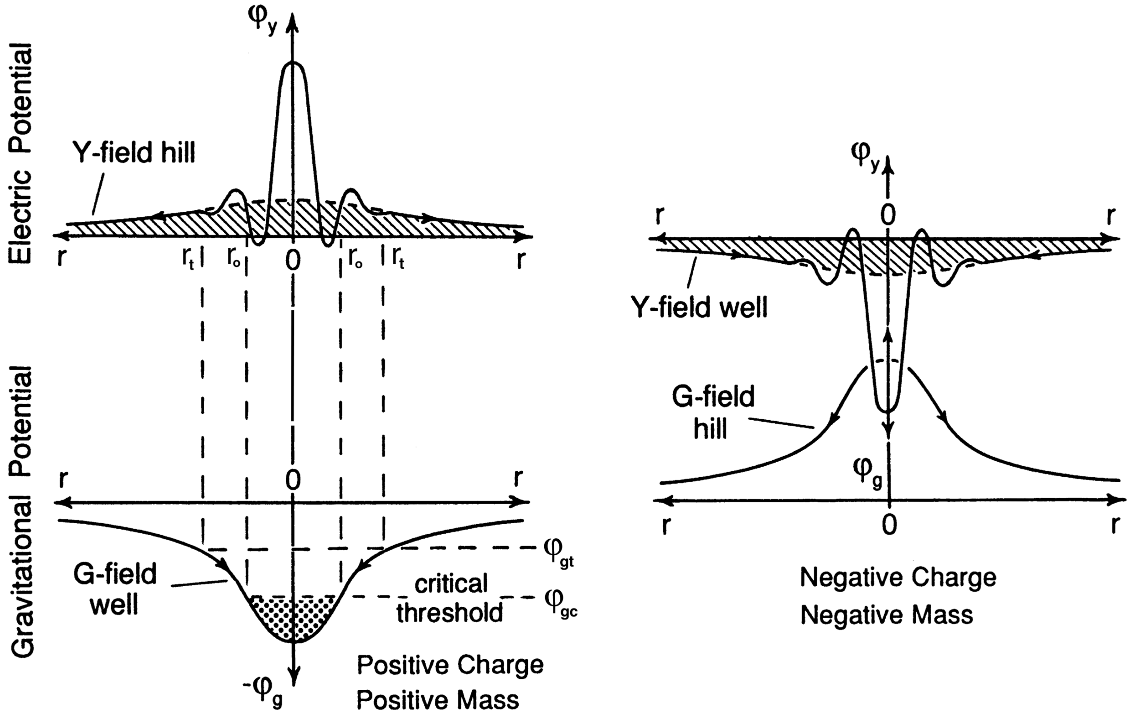

Figure 8. The electric and gravitational fields of positive and negative subatomic particles (P. LaViolette, *Subquantum Kinetics*, 1994).

Explaining the Weight Loss Effect

The weight loss effect is not as easily explained in terms of standard physical theory, but it is understandable within the framework of subquantum kinetics.[16 - 17] Subquantum kinetics predicts that gravitational mass has two polarities (+ and -) and that these are correlated with electric charge. Protons produce gravity wells and gravitationally attract neutral matter, whereas electrons produce gravity hills which gravitationally repel neutral matter. The gravity well of a proton is slightly deeper than the gravity hill of an electron with the result that neutral matter generates a residual gravity well and, hence is mutually attracting. These details of the gravitational polarity of subatomic particles and the direct relation of this polarity to electric charge is a prediction derived from the subquantum kinetics methodology. It is not an ad hoc addition to the theory. This prediction successfully accounts for the electrogravitic coupling phenomena experimentally discovered by T. Townsend Brown who showed that a capacitor tends to experience a gravitational force directed towards its positive pole when charged.*

According to subquantum kinetics, concentration gradients in the X and Y ethers are identified with electric potential field gradients, and concentration gradients in the G ether are identified with gravitational potential field gradients. It furthermore predicts that the core of an electron (negative charge, negative mass) should have elevated X and G etheron concentrations coupled with low Y etheron concentrations; see Figure 8 (right graph). Those unfamiliar with subquantum kinetics or with how these ethers are generated from one another

---

* For information about other predictions subquantum kinetics has made which were subsequently confirmed, see http://www.etheric.com/LaViolette/predict2.html.

should consult the book *Subquantum Kinetics*. The circumferential displacement of the MEC's roller magnets, would create radial electric and gravitational fields in the rotor plane that induce electrons to flow radially outward toward the roller ring. These same fields would correspondingly also move G and X etherons radially outward and Y etherons radially inward. Although there would be an AC component to these radial fields due to the B field oscillation of the roller magnets, there would be a net bias of this field which would cause a net outward flux of electrons, and at the etheric level, a net outward flux of X-ons and G-ons. Thus the moving roller magnet ring acts as an ether pump. These outward X-on and G-on fluxes might have a rotary component aligned in the clockwise direction of magnetic ring rotation, in which case an ether vortex would be produced.

Let us consider what effect this radial G-on flux will have on the Earth's gravitational field in the vicinity of the MEC. According to subquantum kinetics, the Earth is a net consumer of G-ons. Hence it forms a radial concentration gradient in the G ether that extends out into space. This ether gradient, which corresponds to the Earth's gravity potential gradient, diminishes according to the inverse of radial distance. This gradient, in turn, induces G-ons in space to diffuse downward into the Earth. This vertical G-well gradient exerts a downward force on the MEC, attracting it toward the Earth (see *Subquantum Kinetics* for an explanation of how fields induce movement).

Figure 9 displays a side view of the MEC stator and roller ring, also showing the directions in which the MEC induces G-on movement. Thus when the MEC is operating G-ons that normally would diffuse downward toward the Earth generating the Earth's gravity field gradient now are induced to move in a perpendicular direction parallel to the MEC's rotational plane. These G-ons are drawn from above the MEC as well as below. Thus below the MEC, G-ons that normally would flow away from the MEC downward toward the Earth now diffuse upward and move outward along the roller ring rotational plane. The alteration of the G-on trajectories correspondingly alters the G-field gradient passing vertically through the MEC. The graph to the left shows how the gravity potential gradient would be altered. The dashed straight line indicates the gravity potential gradient that the Earth normally produces. The curves to the left and right show how this potential gradient would be altered by the artificially induced G-on flux. The left profile shows how gravity potential might vary on a vertical cross section taken through the central axis of the MEC, while the right profile shows how gravity potential might vary on a vertical cross section taken through the roller ring. The right profile shows that the gravity potential is boosted in the vicinity of the roller ring. This is because the outward radial flow of G-ons would cause G-on concentration to diminish toward the center of the MEC. The net effect is that the gravity gradient at the periphery of the MEC, in the vicinity of its massive roller and stator ring, would be greatly reduced, thereby causing the entire apparatus to lose weight. A similar G-on flux explanation might be applied to explain the gravity shielding effect observed in the Podkletnov experiment.[18]

If the ring of roller magnets were instead made to revolve in a counterclockwise direction, G-ons (and electrons) would be propelled radially inward toward the center of the stator. In this case the center of the apparatus would become lighter whereas the more massive periphery of the apparatus would become heavier. The net result would be that the apparatus would become heavier. In fact, Roschin and Godin have observed that when their roller magnet ring was made to rotate counterclockwise, the MEC apparatus gained weight in proportion to the rotational speed.

The discs built by Searl consisted of several rings of roller magnets, one operating inside the other. Similarly, in future configurations of the MEC, one or more additional roller magnet rings might be added to revolve around the central roller magnet ring. The analysis presented above would apply as well to these additional rings. In the case of a second added ring, if this second ring were to rotate in the same direction as the first ring and were to rotate relative to

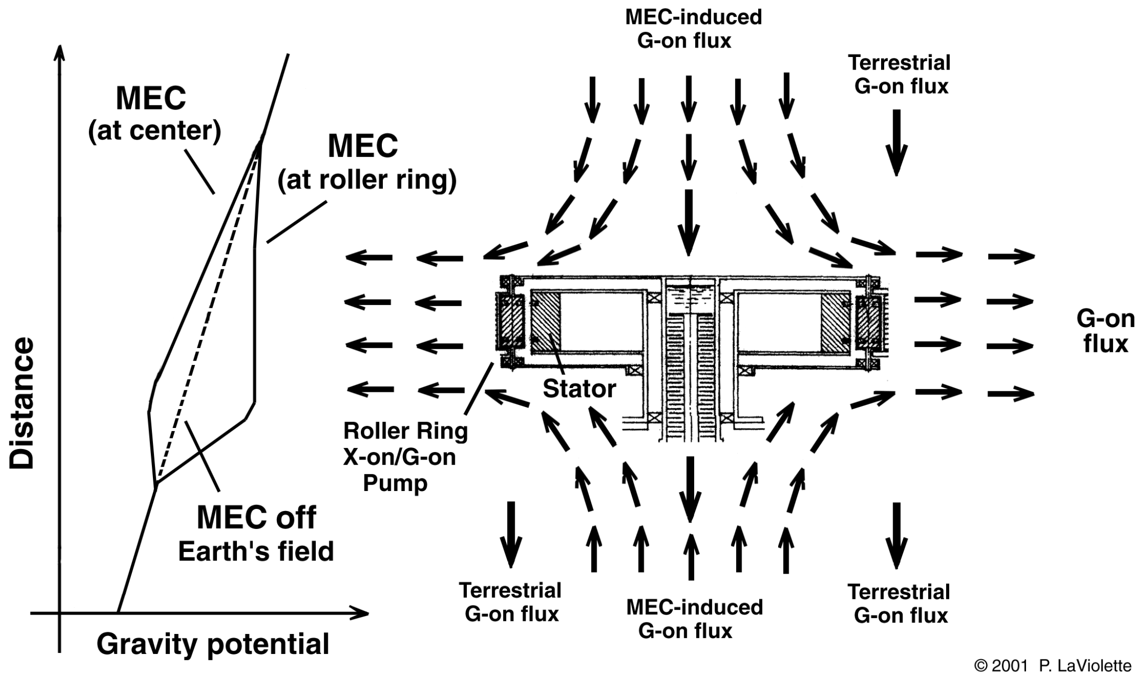

Figure 9. Left graph shows how the Earth's gravity potential field would be altered when the MEC is operating. A vertical line for the potential (zero gradient) would result in a state of weightlessness. Right graph shows how the MEC would alter the G etheron flux in its vicinity.

the first ring at the same velocity that the first ring rotates relative to the stator ring, then the gravitic effects of the two rings would be additive, effectively doubling the weight loss of the apparatus at a given rotation rate. This may be compared to operating two water pumps in series. The innermost ring of roller magnets would pump G-ons outward and the next outer roller magnet ring would further assist this pumping action.

References

1. Roschin, V. V. and Godin, S. M. "Experimental research of the magnetic-gravity effects: Full size SEG tests." unpublished preprint, 2000.
2. Roschin, V. V. and Godin, S. M. "An experimental investigation of the physical effects in a dynamic magnetic system." *Technical Physics Letters* **26** (2000): 1105 - 1107.
3. Valone, T. personal communication.
4. Valone, T. *The Homopolar Handbook.* Washington, D.C.: Integrity Research Institute, 1998, p. 6.
5. Valone, T. *The Homopolar Handbook.* Washington, D.C.: Integrity Research Institute, 1998, pp. 54-55.
6. Shkunov, V. V. and Zel'dovich, B. Y. "Optical phase conjugation." *Scientific American* **253** (December 1985): 54- 59.

7. Pepper, D. M. "Applications of optical phase conjugation." *Scientific American* **254** (January 1986): 74-83.
8. LaViolette, P. A. *The Talk of the Galaxy*. Alexandria, VA: Starlane Publications, 2000.
9. Bearden, T. E. "Soviet phase conjugate weapons." Bulletin No. 308, Committee to Restore the Constitution, January 1988.
10. Lemons, T. and Obolensky, G.. "Improved operation of HID lamps," *Lighting Design & Application*, January 1978, pp. 55 - 58.
11. White, J. O., Cronin-Golomb, M., Fischer, B. and Yariv, A. "Coherent oscillation by self-induced gratings in the photorefractive crystal $BaTiO_3$," *Applied Physics Letters* **40** (1982): 450–452.
12. Cronin-Golomb, M., Fischer, B., White, J. O., and Yariv, A. "Passive (self-pumped) phase conjugate mirror: Theoretical and experimental investigation," *Applied Physics Letters* **41** (1982): 689–691.
13. Vassilatos, G. *Secrets of Cold War Technology*. Bayside, CA: Borderland Sciences, 1996, pp. 44 and 46.
14. Obolensky, A. G. "The mechanics of time," *Proceedings of the 1988 International Tesla Symposium*, ed. S. Elswick (Colorado Springs, CO, International Tesla Society, 1988), pp. 4.25–4.40.
15. Obolensky, A. G., personal communication.
16. LaViolette, P. A. "An introduction to subquantum kinetics." *Intl. J. General Systems* **11** (1985): 281 - 294, 295 - 328, 329 - 346.
17. LaViolette, P. A. *Subquantum Kinetics: The Alchemy of Creation*. Alexandria, VA: Starlane Publications, 1994.
18. Matthews, R., and Sample, I. "Breakthrough as scientists beat gravity." *Sunday Telegraph* (UK), September 1 1996, page 3.

Acknowledgements:
I wish to thank Tom Valone for the helpful comments he has made to this paper.

Paper retail price: $5
(free with contribution to the Starburst Foundation: www.etheric.com/Starburst/Starburst.html)