SUPERLUMINAL PARTICLE MEASUREMENTS

by

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Abstract

Measurements made on clusters of electrons operating as Exotic Vacuum Objects, or EVOs, show velocities exceeding that of light. A theory of this behavior is presented based on manipulation of parameters available in this new field of exotic vacuum engineering.

Background

Measurement methods are presented here showing that clusters of electrons, or EVOs, can take on a state of self-organization that becomes undetectable using conventional measurement methods. While in this highly coherent EVO state, a cluster of 100 billion or more electrons are rendered invisible through an astonishing increase in velocity. An early publication by Shoulders [(3)] claimed a possible explanation for this *black* EV behavior could be traced to extraordinarily high velocities but the large numbers associated with this premise grossly violated common knowledge of particle transport laws. It was not until the advent of the theory on exotic vacuum manipulation by Sarfatti [(4)] was it deemed appropriate to make public the data claiming superluminal particle velocities. Although various other explanations were sought throughout intervening years, none fit observations as well as the one presented here.

Goals And Assumptions

The primary goal of this writing is to introduce the notion of how easy it is for particles to exceed the velocity of light, as long as some special circumstances can be tolerated, such as, they are not in our world anymore. Living with that, the realm of superluminal particles is no longer the exclusive domain of atom smashers and huge machinery as the EVO takes you into that realm every time you make a spark to the doorknob. In fact, miniature Plasma Focus machines have been made and tested on this program that have shown the essential role of EVOs in large PF machines capable of enormous, real-world particle acceleration. The notion will be briefly introduced that it is the characteristic of EVO structures that are responsible for anomalous electron acceleration in almost all walks of life.

A secondary goal is to introduce the reader to the ingenious EVO behavior capable of initiating an entirely new self-organizing realm of construction using nothing but electrons for construction material. The binding energies of these new structures far exceed those of atomic and molecular bonds leading to higher strength, higher mobility and longer life structures.

What cannot be attempted in this short paper is the presentation of the fascinating study of ion plumes produced by EVO disruption showing much about the EVO structure itself.

Interpretation of the physical data presented, toward the end of showing superluminal transit of particles, is based on the belief that a disappearance of measurable evidence of the EVO, through diminution of detectable election emission, indicates a velocity increase. An analogy is suggested that an EVO can be thought of as a burning ember emitting electrons instead of photons as it traverses space. In this scenario, the faster the ember goes, the dimmer its path appears to a bystander even though its emission rate is constant.

Basic Measurement Method

This writing introduces the measurement methods and theory used in EVO technology without first building a background of knowledge for these. The reader should refer to the references cited below for basic data in the field.

The small structures used in this apparatus is to see details of interactions that would not be available at much larger sizes, in fact, the magnification should be raised another order of magnitude to see details properly. The short runs viewed here are by no means the limit of the technology as lengths of several feet for EVO runs have been used in the laboratory without detailed analysis being applied. Lightning threads or streamers have shown runs of several miles and have been photographed many times by others. Indeed, these lightning streaks show the same black regions as those presented here. They undoubtedly belong to the same class of EVO behavior studied here but carried out on a large scale. This lightning example tends to confirm that there is no pressure sensitive behavior between vacuum and atmospheric pressure. Indeed, EVOs bore holes through solids but their *blackness* cannot be confirmed. One thought must be constantly born in mind; the rapidly moving, black EVO is normally capable of almost instantly converting back to the white phase with the overall result of no energy gain being derived from the process of apparent acceleration although examples will be pointed out in the following data presentation where this is not strictly so. Direct electrical energy gain appeared for the first time in some of these very early measurements.

When an ordinary white EVO [3,5,6,7,8,9,10,11] is viewed through a pinhole camera working in vacuum and designed to simultaneously image electrons, ions and high-energy photons, as well as determine the sign and energy of particles, it appears as a visible streak on a phosphor screen due primarily to narrow-band electron emission from the moving EVO. In the data to be presented here, the original images were white lines on a black appearing phosphor screen. The figures shown below have been inverted and presented as black lines on a white background to accommodate the printing process. The recording of data was done on a video camera with a gamma limitation of about 256 levels of gray, and with background light leakage, the recordings are even less than this. Whenever larger ratios than this are measured, they are done directly using oscillographic methods in conjunction with gain change of the micro channel plate electron multiplier used in the pinhole camera. The video data rate was set to several EVO launchings per second to allow the camera to clear between firings. The recorded frame time shows the elapsed time for an experiment.

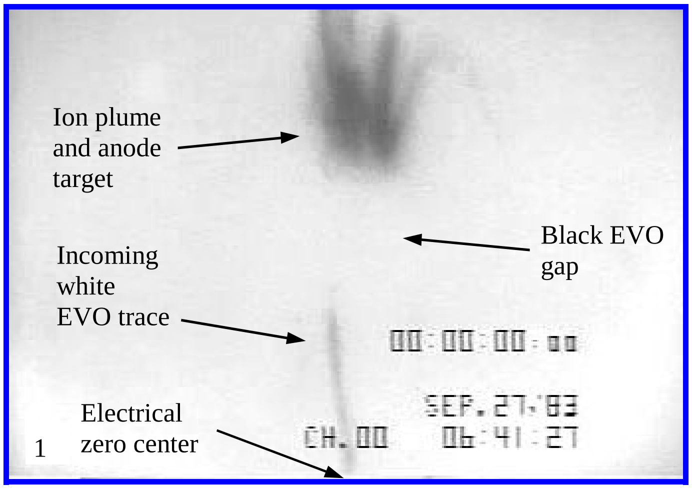
The layout used for the measurements presented here is illustrated by annotation applied to Fig. 1, a photo of a flat substrate having an EVO source and a target anode on it. The anode, or target, is a stripe of silver that is fired-on to the alumina substrate. The anode is normally operated at ground potential. The distance between the source and anode target is 0.4 inch and the field of view of the camera is approximately 0.1 inch. In all of the EVO runs shown, only a small portion of the run is in the camera view in order to operate at higher magnification. For some of the runs, presented in Fig. 13 through Fig. 20, hydrogen gas is gradually introduced to the system. All gases tested act as a sheath for the EVO allowing it to effectively decouple from the structures around it at pressures as low as 10^{-3} Torr.

The camera can directly measure the energy spread of EVO emission, which is found to be less than 1 volt thus allowing the velocity of the EVO to be accurately determined by electron energy, Doppler shift in both the advancing and receding directions of travel. The images shown here use an EVO velocity of approximately 0.1c and are made with the camera pointed directly down on the surface being analyzed, thus no Doppler shift is evident. In addition, the transit time of the EVO along its path can be tracked by either direct oscilloscope measurement methods or wide band, pulse coincident methods using Schottky diodes and a calibrated delay line for timing.

Data Presentation

The photos to be presented are divided into 3 groups showing: 1) energy and charge analysis turned off, 2) energy and charge analysis turned on, and 3) effects of a gas environment.

Energy and Charge Analysis Turned Off (Fig. 1 & Fig. 2)



Referring to Fig. 1, it can be seen that there is a break in the line depicted as an incoming white EVO trace. This break is the region designated as a black EVO gap where there is no measurable electron or ion emission. In Fig. 1 and Fig. 2, the energy analysis is off so the EV enters at the bottom center of the photo at the mark called the electrical zero center. The region of primary interest for this work is the black EVO region where there is clearly an absence of measurable electrons, yet, the energy form called the black EVO reached the anode and deposited its energy. Often, faint regions of emission can be seen as the black EVO state is momentarily disturbed due to a surface asperity producing an abrupt field change.

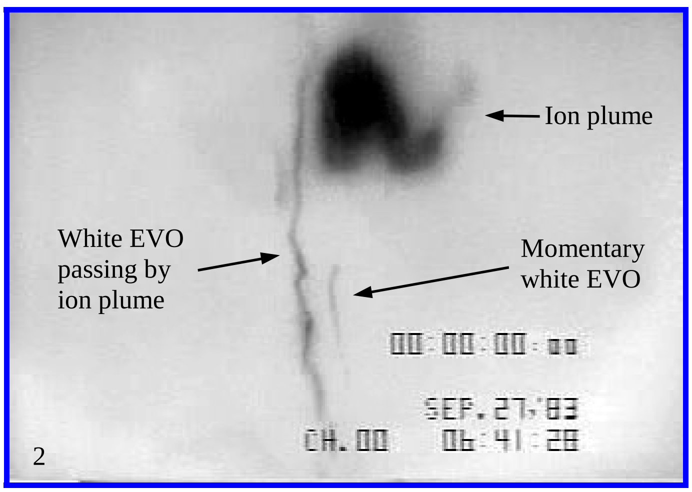


Fig. 2 shows a rare example of a white EV passing by the ion plume, presumably without touching it. If this is the case, the other energy form must have produced the plume before the white one crossed the anode area. This is called the momentary white EVO in the photo that seems to have been black before showing itself briefly and then going back into the black mode just before striking the target. In complex situations like this, there is little certainty about what actually happened. The only thing that can be said with certainty is that some energy form emitting electrons momentarily by apparently appearing from nowhere. A measured state change is certainly verified.

Energy and Charge Analysis Turned On (Fig. 3 through Fig. 15)

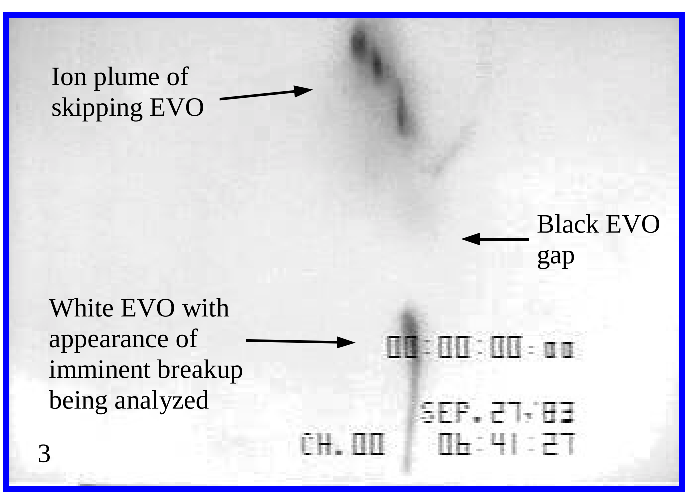
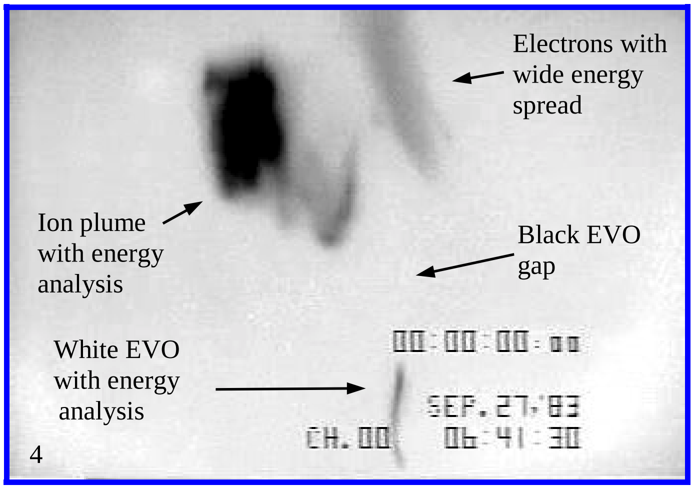
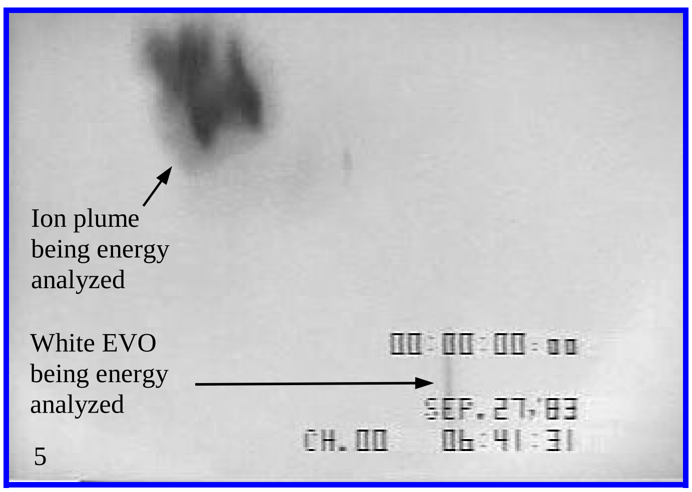


Fig. 3 has two anomalies in it worth mentioning although they further complicate interpretation. The energy analysis field has been turned on as shown by the deflection to the right of the electrons emitted from the white EVO coming in from the bottom of the photo. The region of the anode has been skipped over by a form energetic enough to knock off ions or high-speed neutrals. The pattern is difficult to explain because there is a hint of a fairly well defined energy spectrum to the ions that have also been translated upward. The other peculiarity in this photo is the way the EVO is giving the appearance of an imminent breakup. It emitted a burst of electrons and then went black before dancing over the anode target.



In Fig. 4, it is clear from the deflection to the right of the white EVO entering at the bottom that the energy analysis potential has been raised. The black EVO gap is evident as is the normal ion plume far to the left of the actual anode in the photo. At the top of the photo, there is a reference to a smear of electrons with a wide energy spread. This energy analysis is showing that the energy of these electrons is increasing as they move toward the top of the picture. This is deduced from the fact that they are not as deflected as those at the bottom. The one thing that must be constantly guarded against using this type of energy analysis method is that the object being analyzed must be moving orthogonal to the energy analysis plates located within the camera body. If the electron cloud showing had a component of motion off the perpendicular axis, an error results. In the single photo shown, this ambiguity cannot be resolved. However, repeated observations of this type have been seen which lead to a strong but still tentative conclusion that this electron velocity increase is actual. Photos to be discussed later add reinforcement to this notion.



It is evident in Fig. 5 that the energy analysis field has been increased further because of the deflection showing in the white EVO being analyzed. This particular analysis is good because there is no obvious skew to the EVO path. It is cleanly moved to the right. Under these conditions, it is possible to perform a rough analysis of the energy spread of the electrons emitted from the EVO. Although the conditions are not right in the present photo to show more than a 10-volt analysis width, other conditions using offset potentials have shown an energy spread as low as 1 volt. By using a retarding potential Doppler method, this same 1-volt spread has been verified for a 2-kilovolt electron velocity.

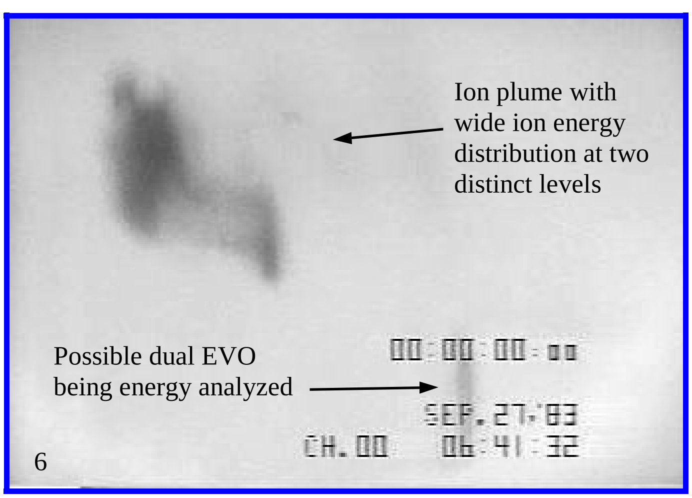
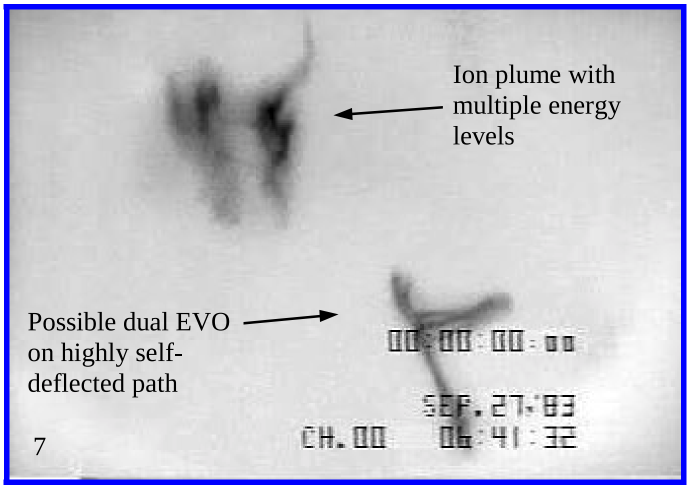
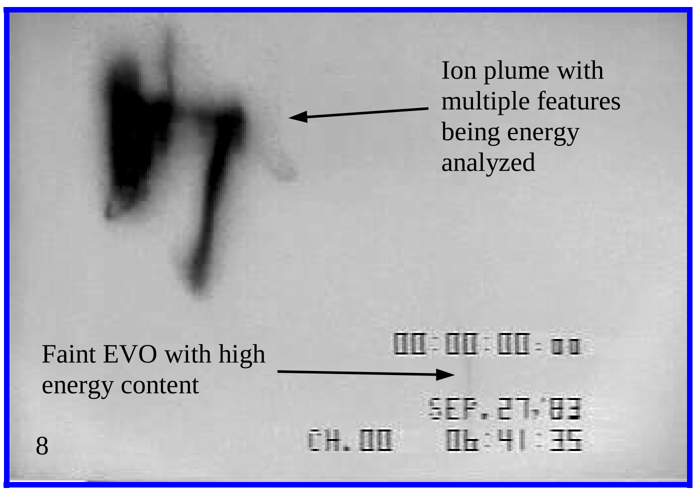


Fig. 6 is very similar to Fig. 5 except for the possibility of the entering EVO being a twin or dual species that has been separately documented. These show as very tightly bound entities consorting on the same path. The ion image shows a wide energy range that is somewhat bi-level. Still, there is the black EVO gap.



The path of the entering EVO shown in Fig. 7 starts at the energy level of Fig. 6 but rapidly increases in energy and undergoes a wild, self-effected excursion in either path or energy level. No accurate determination can be made in this case although it should serve as a warning to those attempting a simple analysis of the events portrayed here. The ion plume shows an interesting multi-level energy structure that is common to this ionization method, and in particular, to dual EVO structures.



A faint, straight entry EVO shows in Fig. 8 that terminates in a black EVO run before reaching the anode. There is a jet of ions seen coming from the target in a direction reversed from the EVO travel direction. One should not be surprised to see this because the events at the anode are so tumultuous that almost anything can happen. Although it is difficult to believe in absolute energy tracking using this camera measuring technique, it is possible to get a feel for relative energy levels. The target explosion seen in Fig. 8 is a strong one as seen by the fact that the video camera was completely saturated. This is a sure warning that faint looking, or even black, EVOs are far from faint in energy level. They just don't emit electrons strongly.

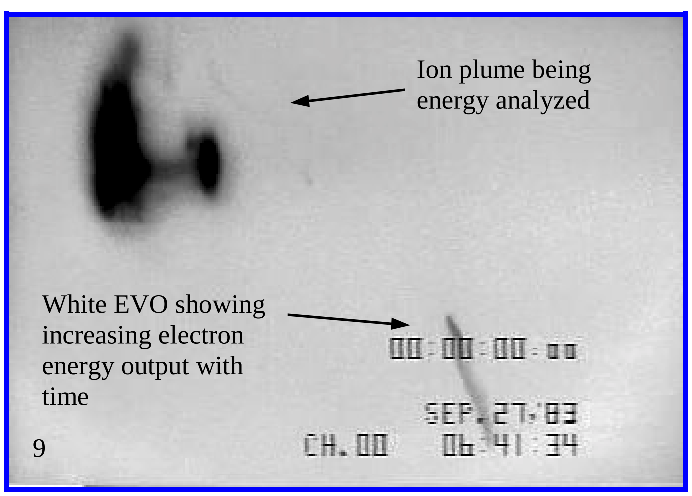


Fig. 9 is another example, similar to Fig. 7, in which the energy level is assessed as increasing the energy output level of its particles with time or distance traveled.

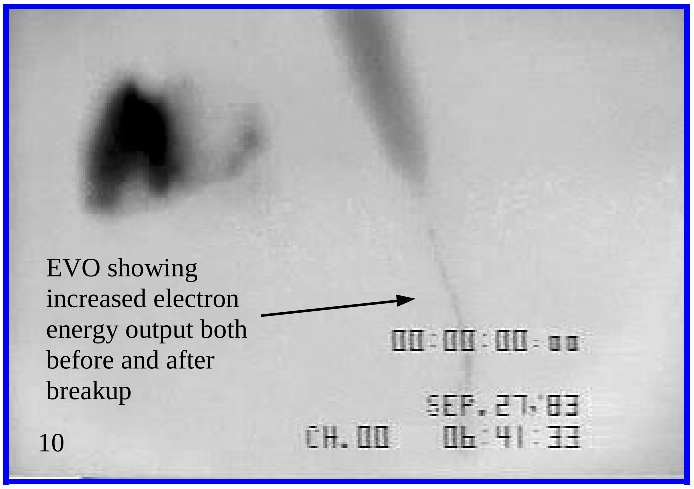


Fig. 10 is a nice example of combined effects where the EVO is shown coming in on a straight path with well-determined energy levels of emitted electrons. It then executes a turn in the photo, which means the energy is increasing for emitted electrons which ever way it is actually going, then begins entering the black mode with an attendant showering of electrons having higher and higher energies. It should be clear from this photo that the earlier examples of this type of action are also likely to be doing the same thing, which indicates an increased velocity with time or distance traveled of emitted electrons during a special type of EVO dishevelment. A portion of the high velocity afforded a black EVO is thus at least partially recovered as real velocity in this scenario.

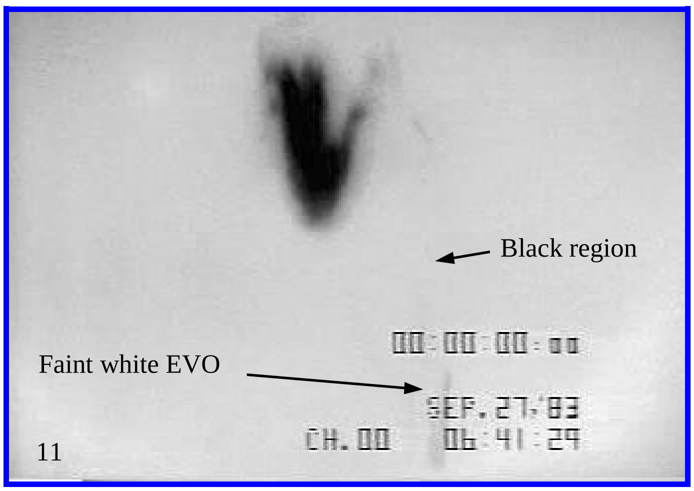


Fig. 11 is a very normal photo for this type of experiment and nothing very unusual is happening other than showing faint looking EVOs carry as much or more energy than do more robust looking ones. Large, white EVOs can be an indication of low stability.

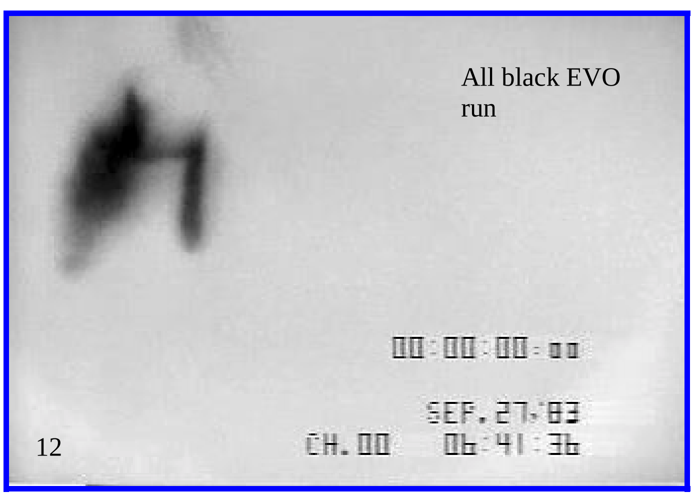
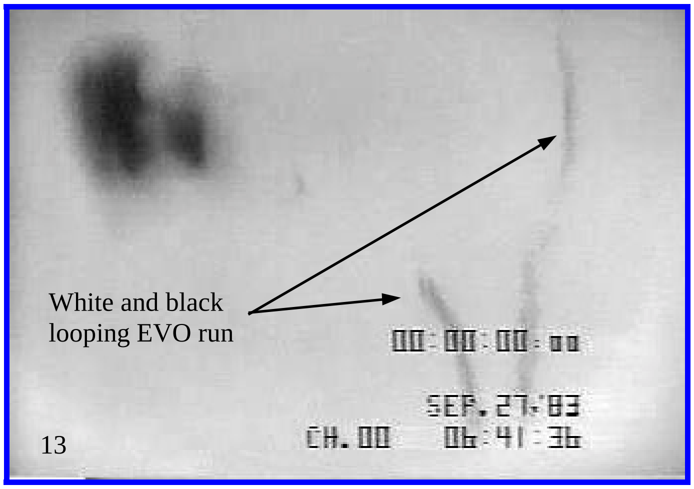
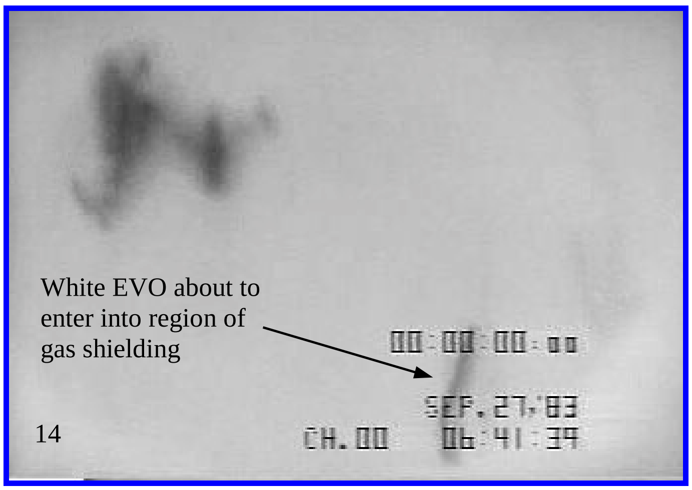


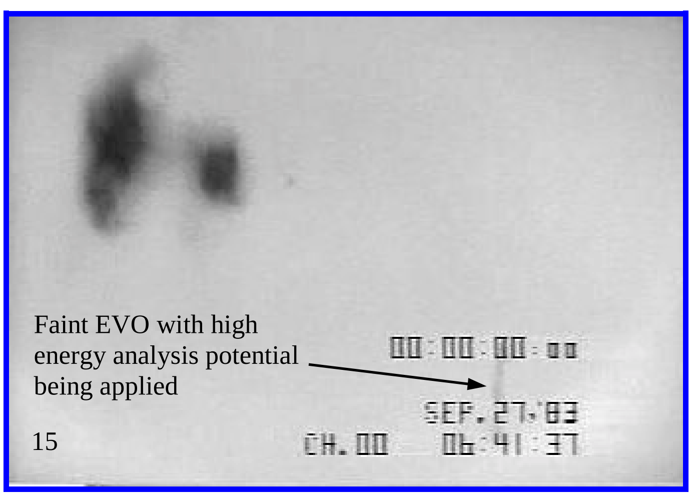
Fig. 12 is also normal in that the EVO run is completely black. This is the type of run needed when using the camera at high gain to see how black the EVO really is. Under these conditions, it is necessary to operate with a dependable EVO source so that the velocity can be surely known without seeing it in the camera. With care in operation, the gain of the channel plate electron multiplier can be raised to about 50,000 times the normal operating level without seeing anything but scattered particles. With even greater care, these stray events can be suppressed for special measurements up to a gain level of 1 million.

Effects of Gas Environment (Fig. 13 through Fig. 20)



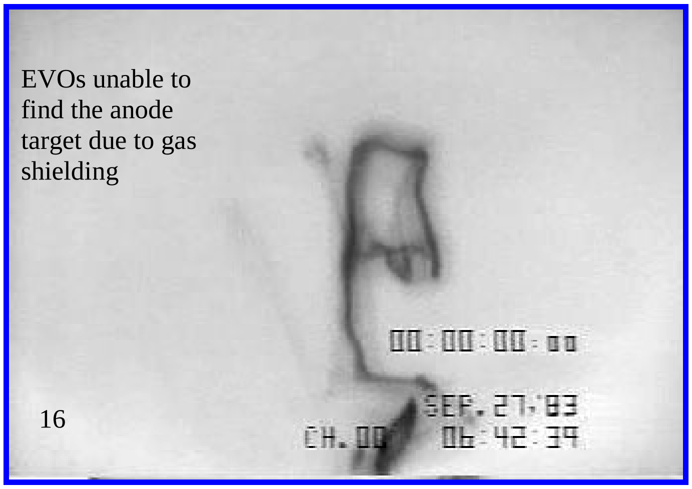
As the region between the EVO source and the target anode is raised in gas pressure from vacuum to a pressure of about 10^{-2} Torr, a shielding effect or shrouding of the EVO can be seen which isolates it from surrounding structures and influences. In Fig. 13, two input EVO runs can be seen, one of which is looping around the anode in an uncertain way. The target was found by one EVO but not by the other, which continued away somewhere off screen. At this gas pressure, the nearby anode is becoming difficult to sense and the EVO is largely left on its own to determine a pathway.

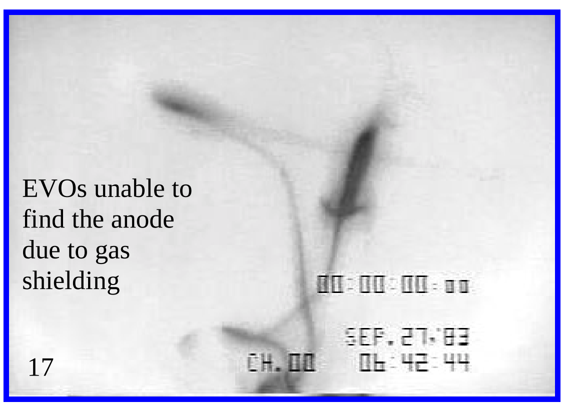


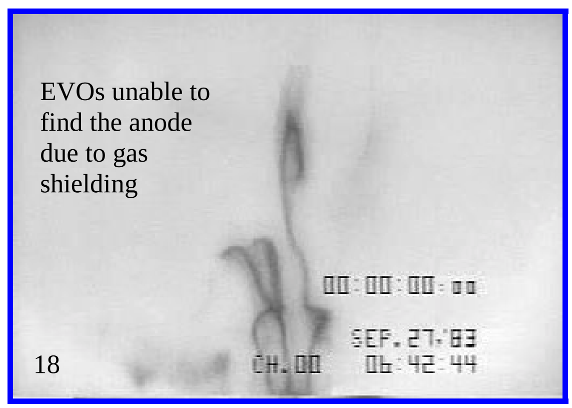


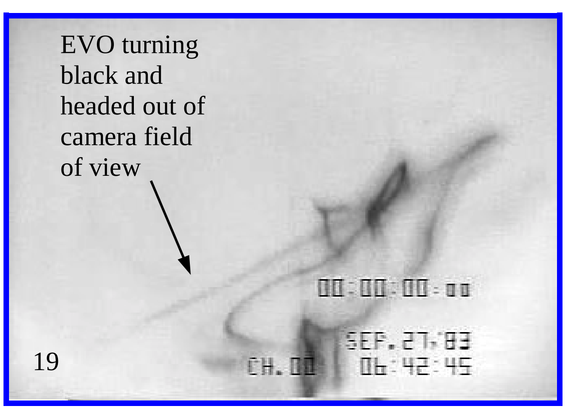
In Fig. 14 and Fig. 15, the anode is found but many EVO launchings go astray and hit somewhere far out of the view of the camera. At an intermediate pressure of around 10^{-3} Torr, all that is seen is stray flashes. In this regime, the EVO is hugging the surface and not able to sense far distant electrodes or fields formed on the dielectric substrate. It usually skates around until it finds something of interest and then disintegrates.

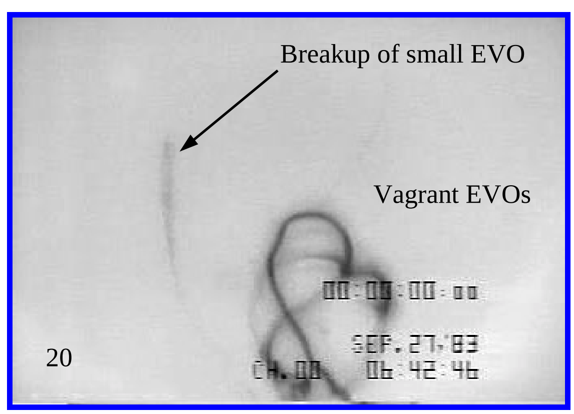
The photos in Fig. 16 through Fig. 20 show what happens when the gas pressure is raised to the 10^{-2} Torr range. These photos have little or no bearing on how the black EVO mode operates to project particles to superluminal velocities, but it does show that conditions must be correct to enter the proper operating mode. In these photos, it is clear that these EVOs are wandering around in a very confused state not knowing where to go.





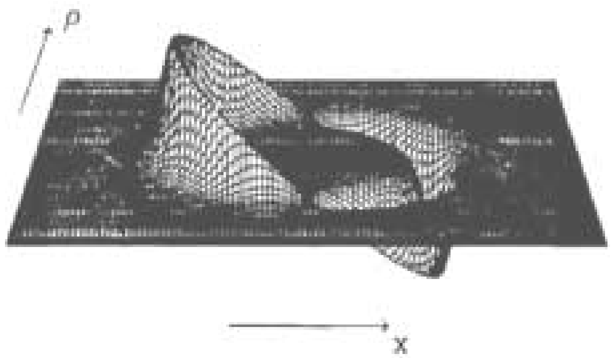






Mesoscopic EVO Superluminal Warp Drive?

$$\vartheta = -\alpha \, \mathrm{Tr}(K)$$



The Warp Drive:
Hyper-Fast Travel Within General Relativity
Miguel Alcubierre, Classical Quantum Gravity II
1994, L73-77

The EVO's speed is locally subluminal on a timelike free float geodesic inside the light cone. To outside observers, the effective v >> c is outside the light cone because of the peculiar warping of space-time by the exotic vacuum zero point quantum pressure distribution over the spatially extended EVO. For example, if as shown in Alcubierre's picture above, the mesoscopic EVO is moving to the right, the blue-shifting /\zpf > 0 "dark energy" has negative quantum pressure that EXPANDS the 3D space at the back of the EVO and the red-shifting /\zpf < 0 "dark matter" has positive quantum pressure that CONTRACTS the 3D space at the front of the EVO. There should be a narrow Cherenkov cone of radiation coming from the "black" EVO. This cone should also show an anomalous Doppler shift opposite to the one expected. The contraction of space at the front of the EVO will cause a strong gravity red shift that is opposite to the usual Doppler kinematical blue shift for waves emitted from a source coming toward you. One must be careful here because the usual Doppler shift is computed for a subluminal source v << c. The kinematics of a superluminal Doppler shift will be worked out in another paper.

Conclusion

In the examples shown, the level of emission from the black region is over 200 times below the level of the white region. In other measurements, turning up the gain on the pinhole camera channel plate electron multiplier has increased this ratio measurement to levels of over 50,000 to 1 without showing any trace of emission while in the black EVO mode. In the analysis of EVO velocity, it is assumed that the velocity increase of the black EVO is an inverse function of the level of emission, provided some other emission suppressing mechanism is not at work. This being the case, the velocity increase of the black EVO state is many thousands of times above the velocity of the white EVO, which traverses the substrate at about 0.1c. As preposterous as this seems, that is the conclusion offered at this time.

When a white EVO attempts to land on an inductive anode, such as a small diameter wire, the pinhole camera shows that it is often not successful in doing so for several attempts. The oscillating fields set up cause the transition of the EVO from white to black state and then back again for several times. From this observation, it can be surmised that the energy required for a transition is not excessive and that inertial effects are also minimal.

Other images available in reference 10 show the high degree of controllability afforded the EVO and that will be the subject of a forthcoming paper on another aspect of EVO behavior.

References

[1] Ken Shoulders, 365 Warren Dr., Ukiah, CA 95482 (707) 467-9935, Email at: krscfs@svn.net

[2] Dr. Jack Sarfatti, ISEP, 1714 Stockton Street, Suite 100, San Francisco, CA, 94133, Email at: sarfatti@pacbell.net

[3] K.R. Shoulders, *EV--A Tale of Discovery*, Austin, TX, 1987. A historical sketch of early EV work having: 246 pages, 153 photos and drawings, 13 references. Available from the author at: 365 Warren Dr., Ukiah, CA 95482 (707) 467-9935, Email at: krscfs@svn.net

[4] Dr. Jack Sarfatti, "What is the Universe made of?" Presented at GR 17 Dublin 2004 http://qedcorp.com/destiny/warpdrive.pdf

[5] Ken Shoulders and Steve Shoulders, "Charge Clusters in Action", Proceedings of the First International Conference on Future Energy, Edited by Thomas Valone, Published by Integrity Research Institute, Washington, DC, 1999, ISBN 0-9641070-3-1. A .PDF file of this paper is available for download from: http://www.svn.net/krscfs/.

[6] Ken Shoulders and Steve Shoulders, "Observations on the Role of Charge Clusters in Nuclear Cluster Reactions," Journal of New Energy, Vol. 1, No. 3, 1996. A .PDF file of this paper is available from: http://www.svn.net/krscfs/.

[7] U.S. Patents on EV technology by K. R. Shoulders. 5,018,180 (1991) - 5,054,046 (1991) 5,054,047 (1991) - 5,123,039 (1992), and 5,148,461 (1992).

[8] Ken Shoulders, "Low Voltage Nuclear Transmutation". A poster presented at ICCF-10 can be downloaded from: http://www.svn.net/krscfs/

[9] Ken Shoulders, "EVs in Cold Fusion", a 350 MB CD Published by Thomas Valone, PhD, Integrity Research Institute, 1220 L St. NW #100-232,Washington, DC 20005 Also available from the author at the address shown in [3].

[10] Ken Shoulders, "Permittivity Transitions". Published on the web during September 2000 at: http://www.svn.net/krscfs/.

[11] Ken Shoulders, "Energy Conversion From The Exotic Vacuum—Revised. Published on the web during June 2004 at: http://www.svn.net/krscfs/.