Energy Localization

The Key to Understanding Energy in Nanotechnology & Nature

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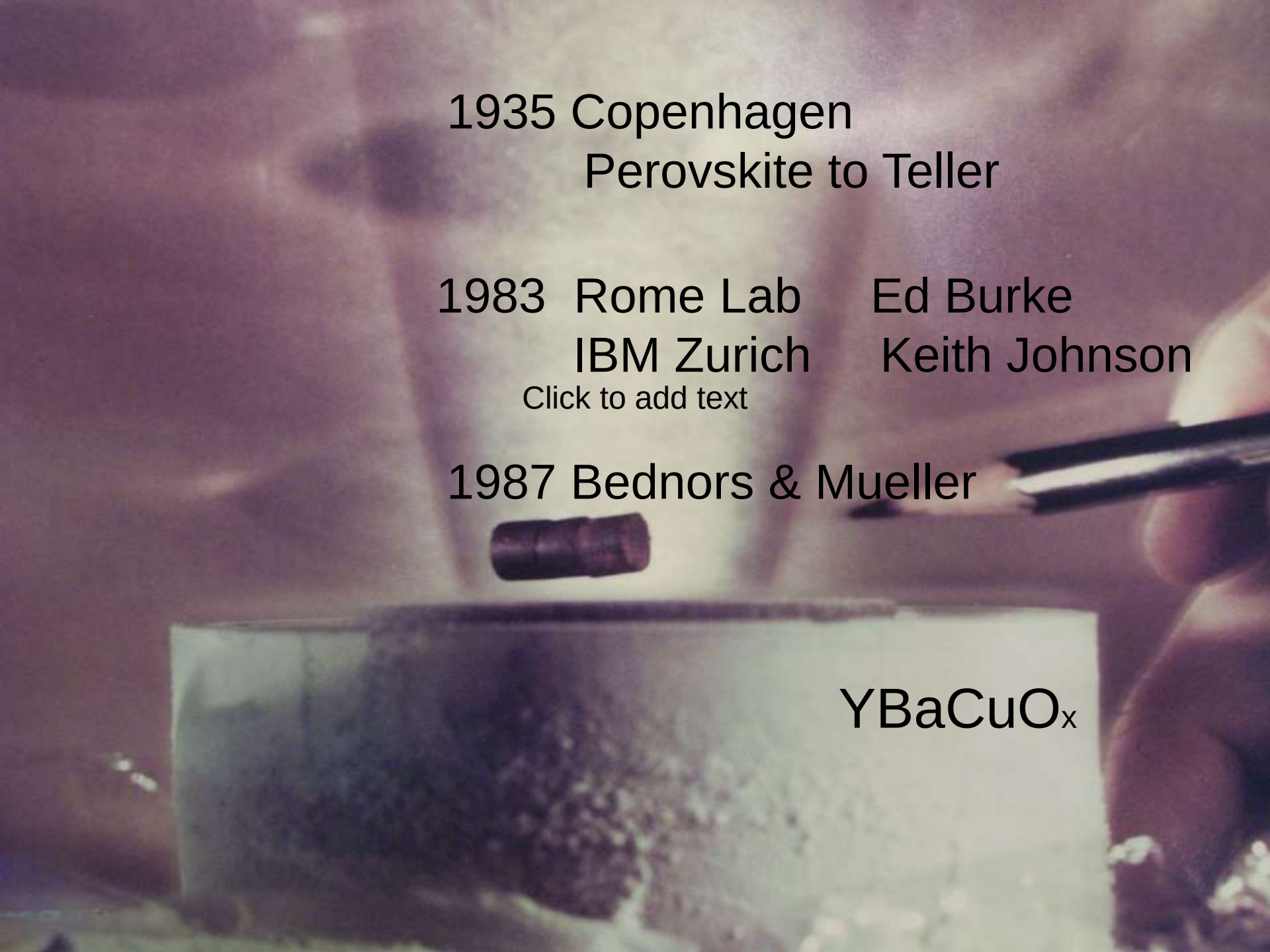

1935 Copenhagen
Perovskite to Teller

1983 Rome Lab Ed Burke
IBM Zurich Keith Johnson

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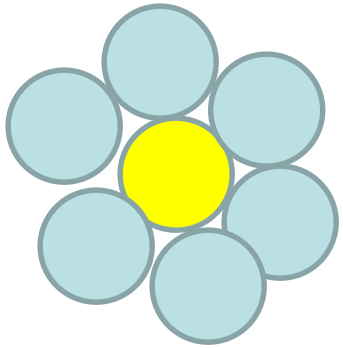
1987 Bednors & Mueller

$YBaCuO_x$

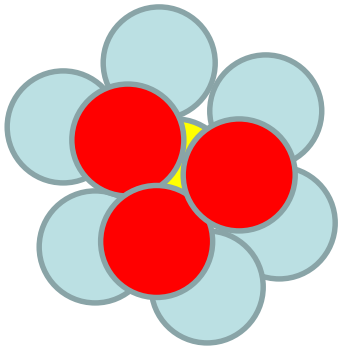
Cluster calculations use a representative number of atoms and iteratively finds the lowest energy configuration for the valence electrons subject to the rules of molecular orbital theory.

How many atoms are required to model chemical and physical properties?

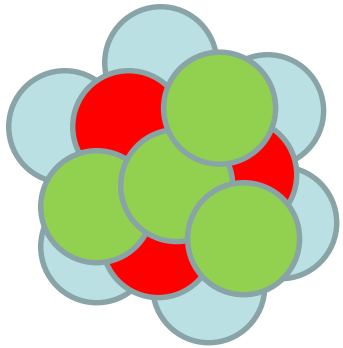


The bond energy of the electrons is a linear combination of atomic orbitals

12 first nearest neighbors



8 second nearest neighbors



1 central atom

12 nearest neighbor atoms

8 second nearest neighbors

21 atoms are sufficient for predictive applications

All the molecular orbital energies of the valence electrons can be found

1968-1976 John Slater & Keith Johnson
X-Alpha Full Scattered wave technique

1974 - 1980 Catalysts for Exxon

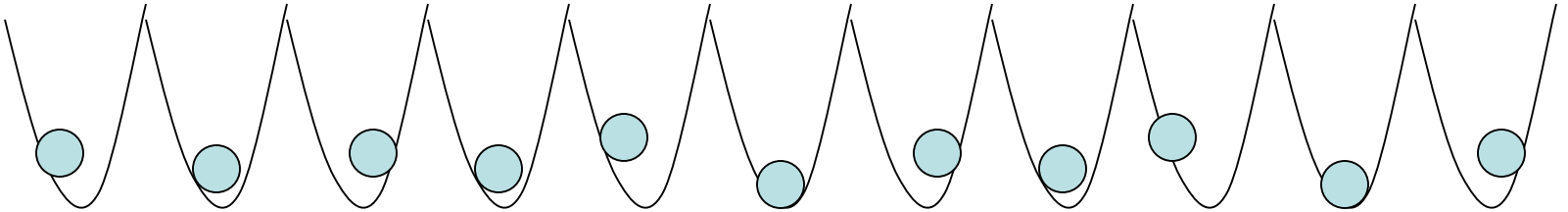
1982 Ferromagnets for TDK B_{1nn} $A.B_{2nn}$

1983 Superconductors for IBM $A.B_{1nn}$ B_{2nn}

1998 Nanocrystalline Light Emitters

1999 General Phase Stability

Atoms in most solids vibrate at high frequency and low amplitude

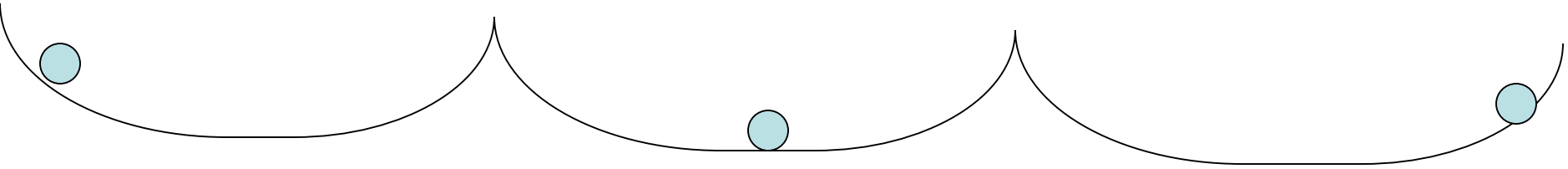


Atoms' nuclei generally reside in parabolic potential wells.

The nuclei undergo simple harmonic motion as if they were connected by springs.

The motion is random. The frequency is high and the amplitude is low.

Some Materials have non-parabolic potential wells
They produce nonlinear vibrational modes

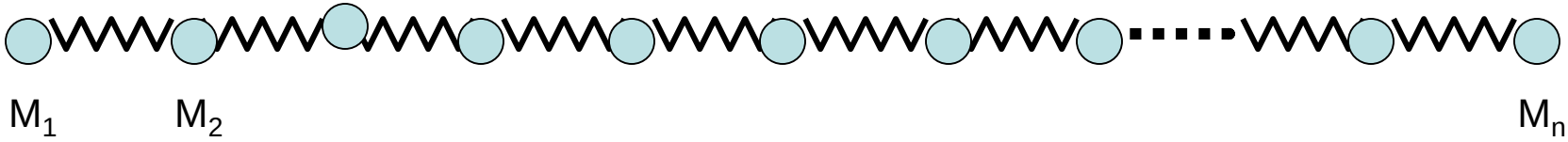


Large Amplitude, Low Frequency Vibrational modes

Superconductors require nonlinear bonding orbitals

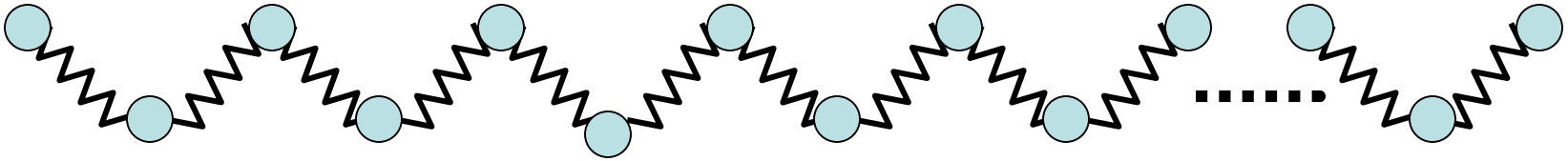
$$k_B T_c \approx 1.13[h^2(m/M)^\beta/4\pi m d^2] \exp\{-h^2/2me^2 d[1-(m/M)^\beta]\},$$

Enrico Fermi, 1954 Los Alamos MAINIAC I



Ideal Springs obey Hooke's Law $F = -k_1 X$, $F = mA$…

FPU

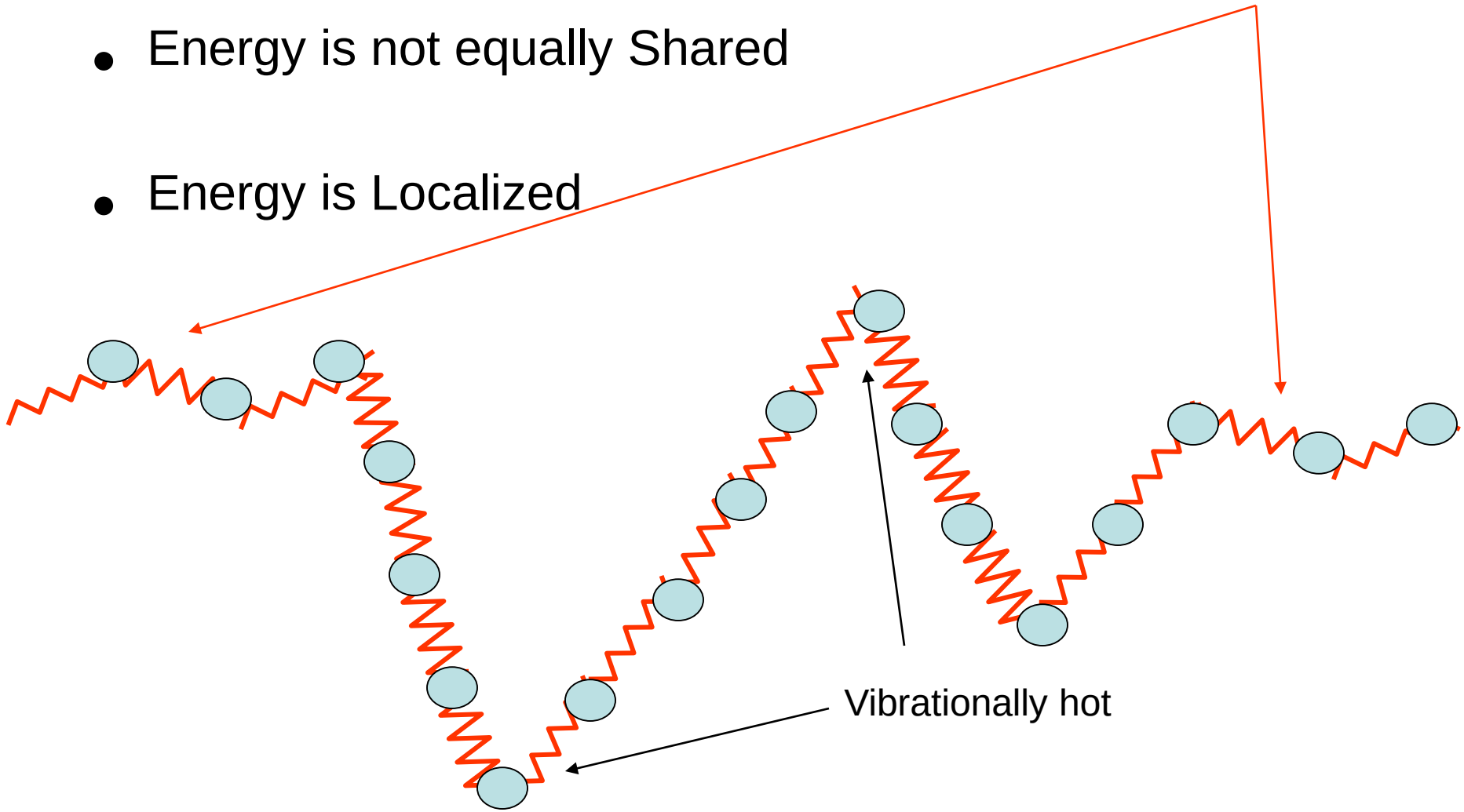


Every mass has the same vibrational energy

Equipartition of Energy

Non ideal Springs

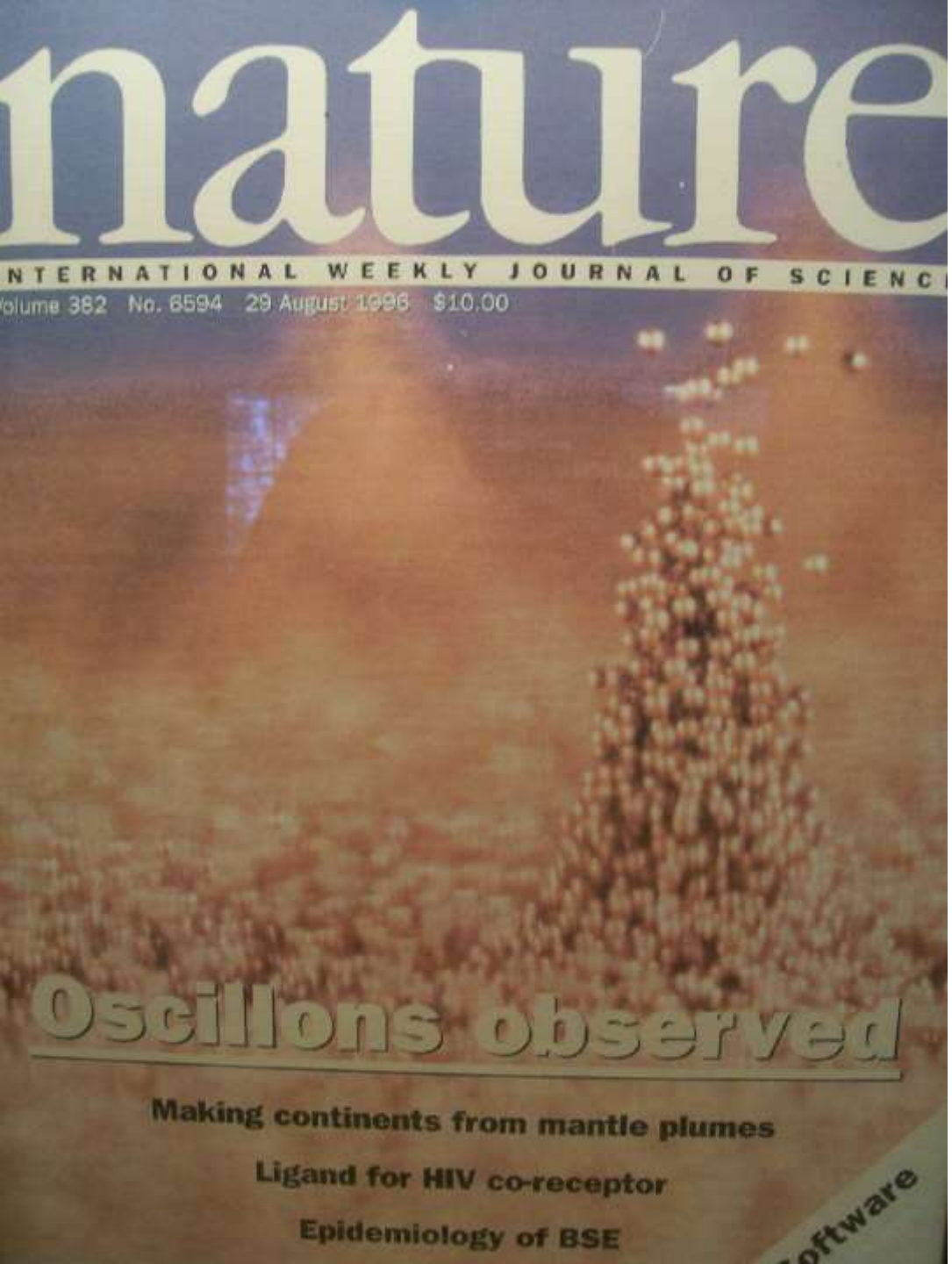
- $F = -k_1X + k_2X^2$
- Energy is not equally Shared
- Energy is Localized



Ulam found that Energy is Localized when there is:

1. A countable number of elements

2. Nonlinear coupling between the elements



Energy Localized vibrational modes are so large that they can break and reform bonds.

Locally, the vibrations act like very hot regions with active chemistry.

Chemistry is introduced to the Simulation

Nanoparticles in the 3 - 12 nm size regime have both properties:

1. A countable number of atoms

A large fraction of the atoms are near the surface and reside in shallow, non-parabolic potential wells

2. Nonlinear Coupling

Energy localization at the nanoscale circumvents the 2nd Law of Thermodynamics

Ordered structures can be assembled from Chaos

Nature evolved to take advantage of these energy exchange mechanisms available only at this size scale.

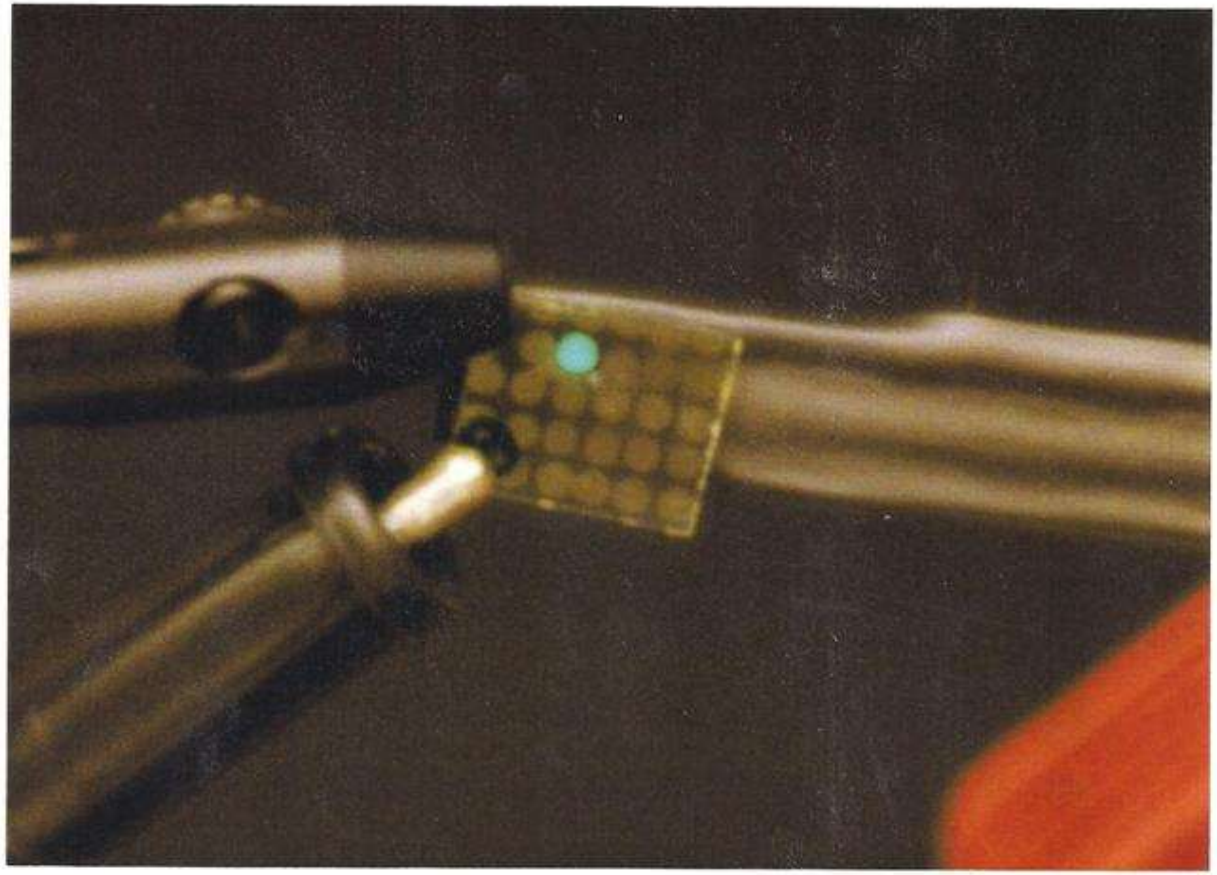
Energy Localized vibrational modes are so large that they can break and reform bonds.

Locally, the vibrations act like very hot regions with active chemistry.

Nanocrystalline Electroluminescent Display Technology

by

Quantum Energy Technologies Corp.
238 Main St.
Cambridge, MA 02142



The QET EL-device having PPV coated on a nanocrystalline $SrTiO_3$/ITO cathode

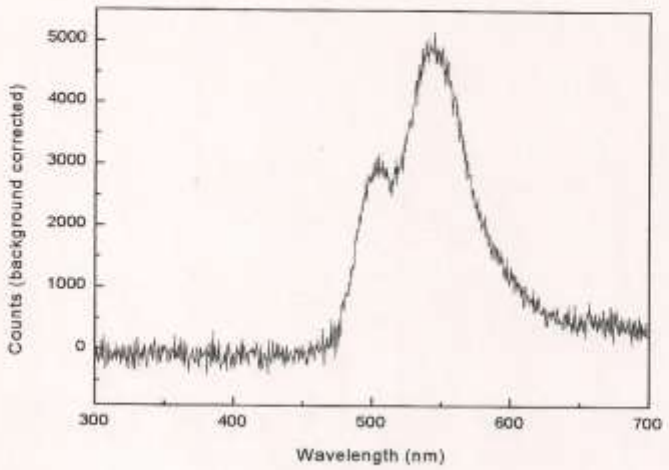


Fig. 1 Electroluminescence spectrum of the QET EL-device

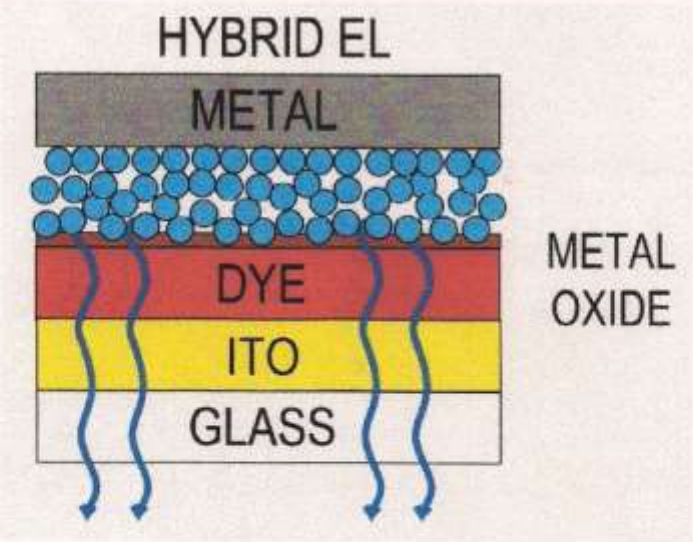


Fig. 2 Schematic structure of the QET EL-device.

Phase I used 100 nanometer $SrTiO_3$ particles

Phase II used 10 nm particles

What are the advantages of going from 100 to 10nm?

Surface area?

Charge transport?

Tunneling?

Something entirely different ?

Light Emitters
Solar Cells
Photosynthesis
Enzyme functionality
Energy production
Nanomagnetism

QD Vision – 5 – 10nm Light Emitters

Firefly 5 – 10nm Luciferase

Photosynthesis Solar Cells

Chemical sensors – deuterated ammonia

All Enzyme action

Ferromagnetism Magnetic Vortices 2006

Yoshiaki Arata 2008

Japan’s most decorated scientist

Order of Cultural Merit

Hydrogen gas added to

5 - 10nm nickel powders

spontaneously produces heat

at a low level.

20 – 100nm powder does not produce heating

.

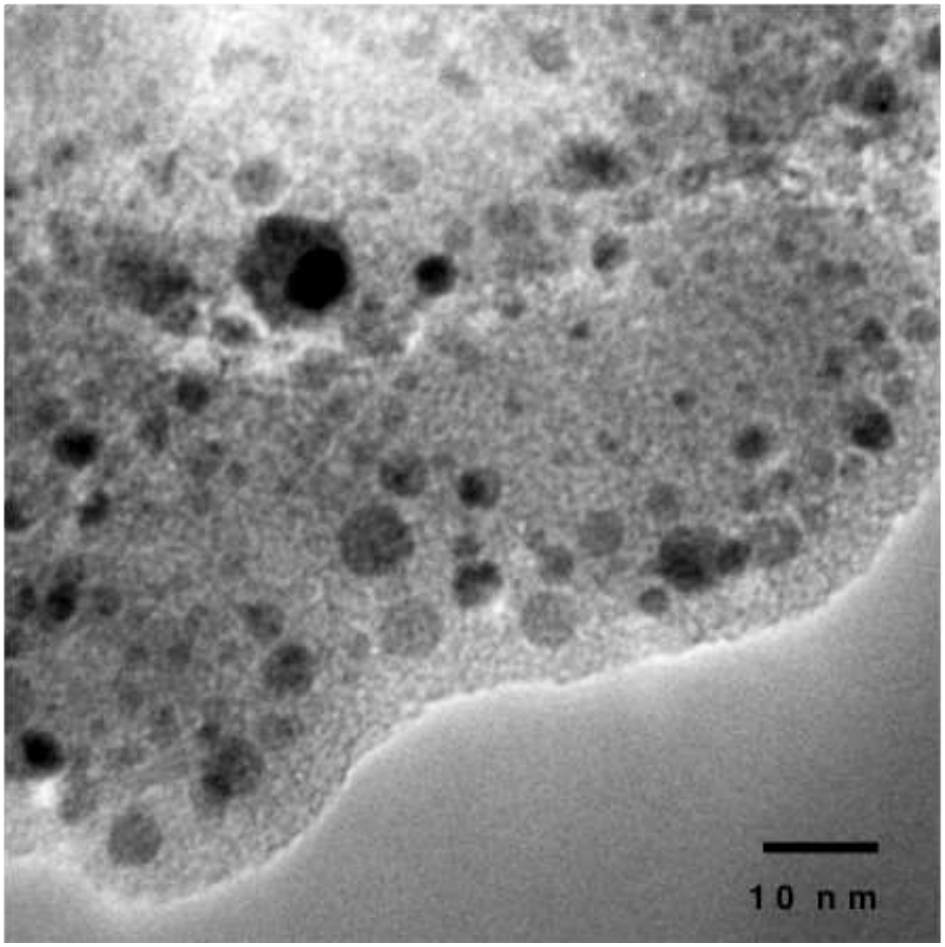
Takahashi reported no excess heat with 20-100nm nickel powder

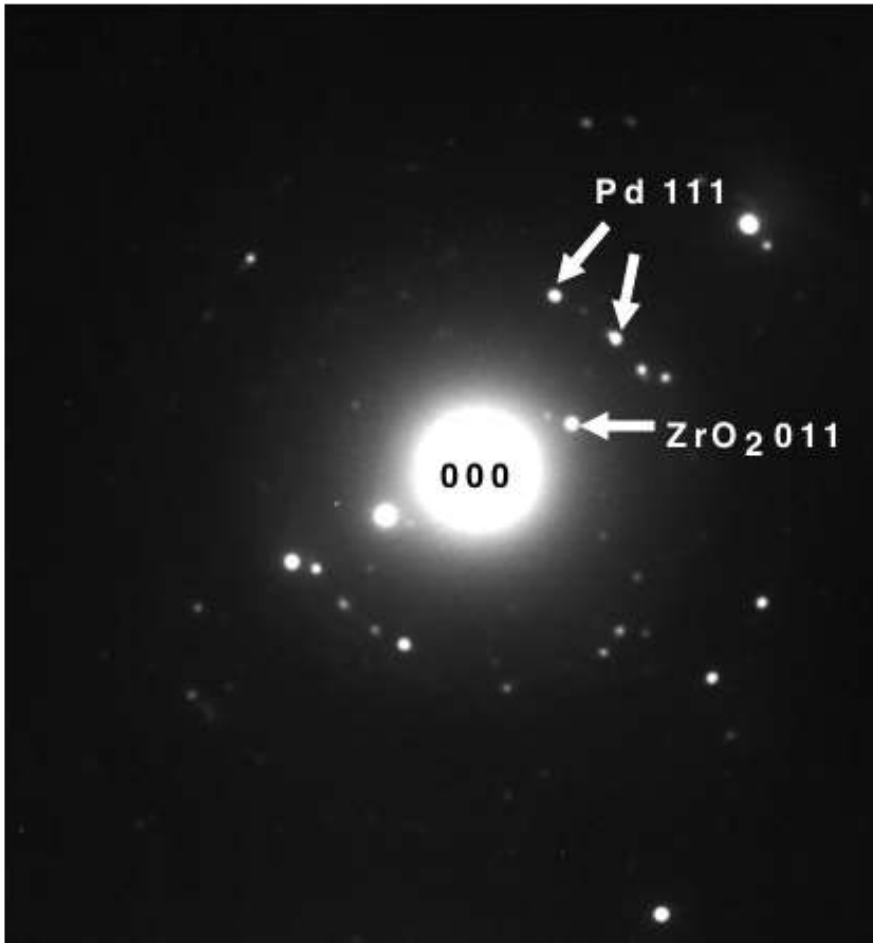
Energy Localization was explained Feb. 2009

Takahashi succeed at 10nm March 2009

show

A TEM Image of a $Ni_{35}Zr_{65}$ sample made by melt-spinning procedure (By courtesy of Prof. T. Oku, University of Shiga Prefecture) As a reference to the B. Ahern's Ni sample



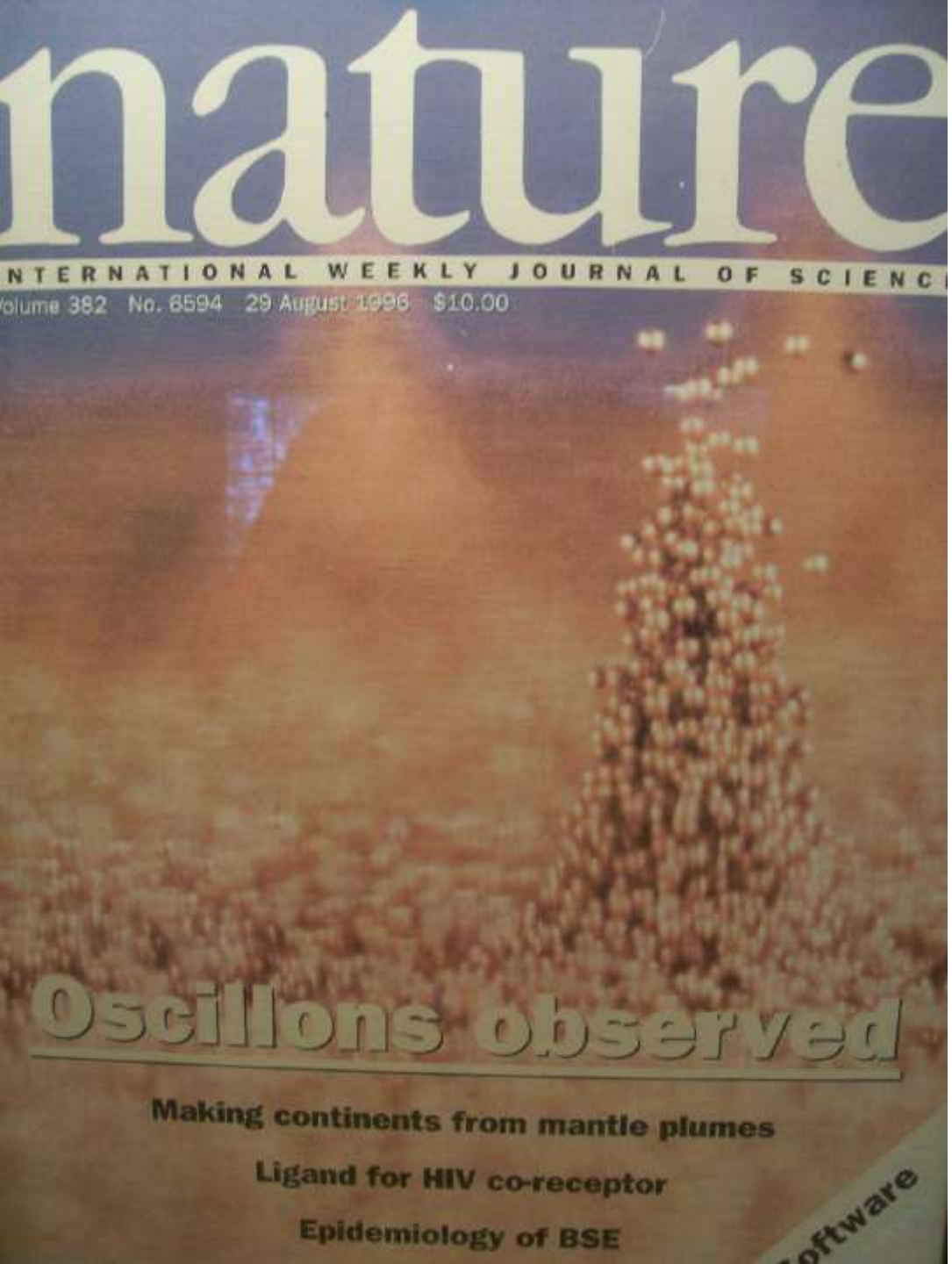


Ferromagnetism is a cooperative process

Energy Localization Amplifies the Process

Magnetic Vortices arise at 10 nm

Nature: Nanomagnetism and Spintronics



Energy Localized vibrational modes amplify ferromagnetism creating dynamic structures

Nanomagnetism has been studied as a possible memory device

Heat can be extracted from magnetic fields through interaction of the vortices

Nano-magnetism
Super-Ferromagnetism

- Vortex interactions extract energy via energy localization

- Energy exchange mechanism is undetermined

Spintronics

Energy Localization

Nonlinear feedback effect

Operates only at 3-12 nanometers

Nature evolved at this size regime (enzymes)

Extreme efficiencies

Energy production

New class of devices

Vacuum Energy via Nanotechnology: Manelas Device Description

Brian Ahern
Vibronic Energy technology Corp

New Source of Clean Electrical Energy

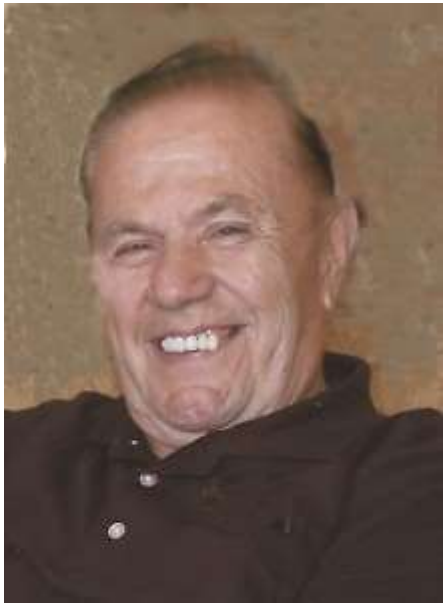
- Strong experimental evidence
- The conundrum: output is too good to be true.
- The source of the energy is undetermined.

Arthur Manelas was the inventor.

Arthur worked as an engineer in the U.S. space program during the Apollo mission and passed away from a stroke in 2014. He held 17 patents for solar. Several sources recognized his greatness afterwards:

INFINITE ENERGY
The Magazine of New Energy Science and Technology

Revolution-Green
Alternative Energy News



What is the Manelas opportunity ?

- 70 Watts of continuous electricity production
- No materials/fuels are consumed
- The stand alone device is 20 months old

- Energy is clean and limitless
- Temperature drop of 5 degrees C measured with a thermistor 6 inches away from ferrite


1997 Solectria

1997 Solectria

Driven 25 miles with four passengers

Battery capacity 69.6% after trip

Battery capacity 89.4% after 7 days

Voltage increased from 168 to 172 volts

3.8kWatt hours replaced = 13.9 megaJoules

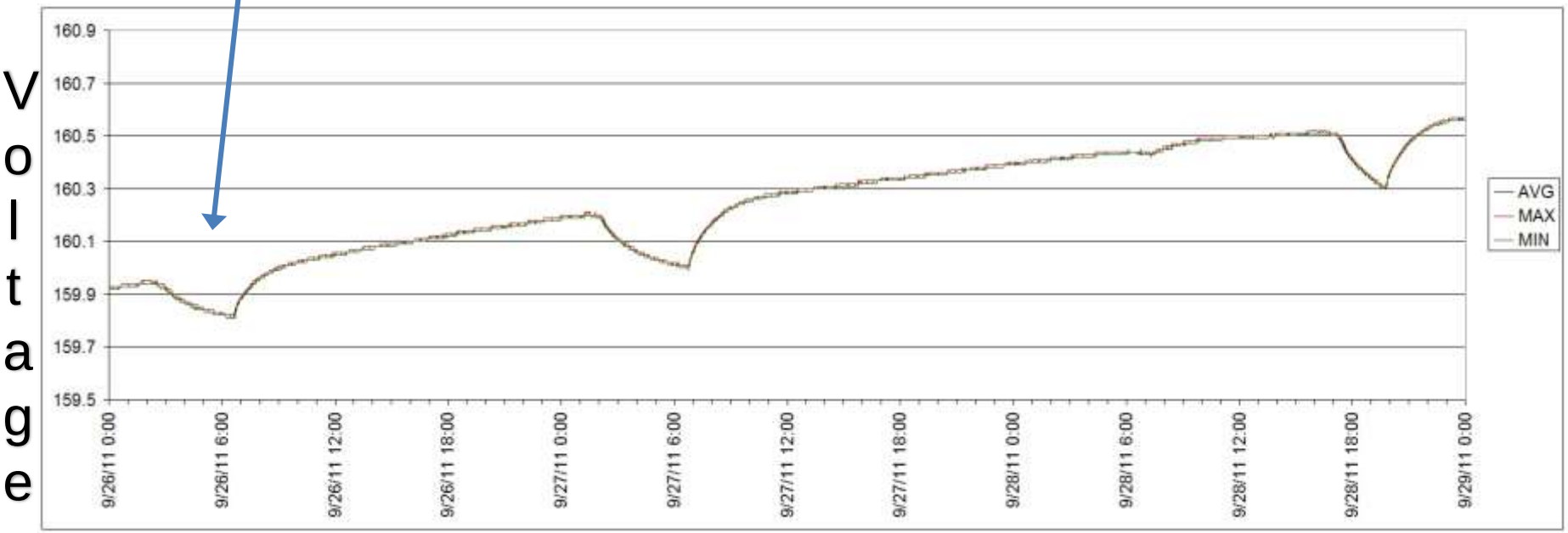
This was the first independent third party test of an over-unity device

Dashboard gauge inside the Solectria. It gauges the amount of energy remaining in the battery. This 69% value was after driving for about 20 miles with four passengers

After 7 days the battery was 89.4% full.

Manelas Data

The voltage dips are a curiosity. The first two began at 2AM on successive nights. They were coincident with a large northern lights display. Much more data is needed. We will add a separate data logging ammeter for the next test. The first dip corresponded with the fourth largest aurora of the year. The second dip is bigger and it corresponded to the largest aurora of the year. Clearly the magnetosphere is interacting with the device operation.

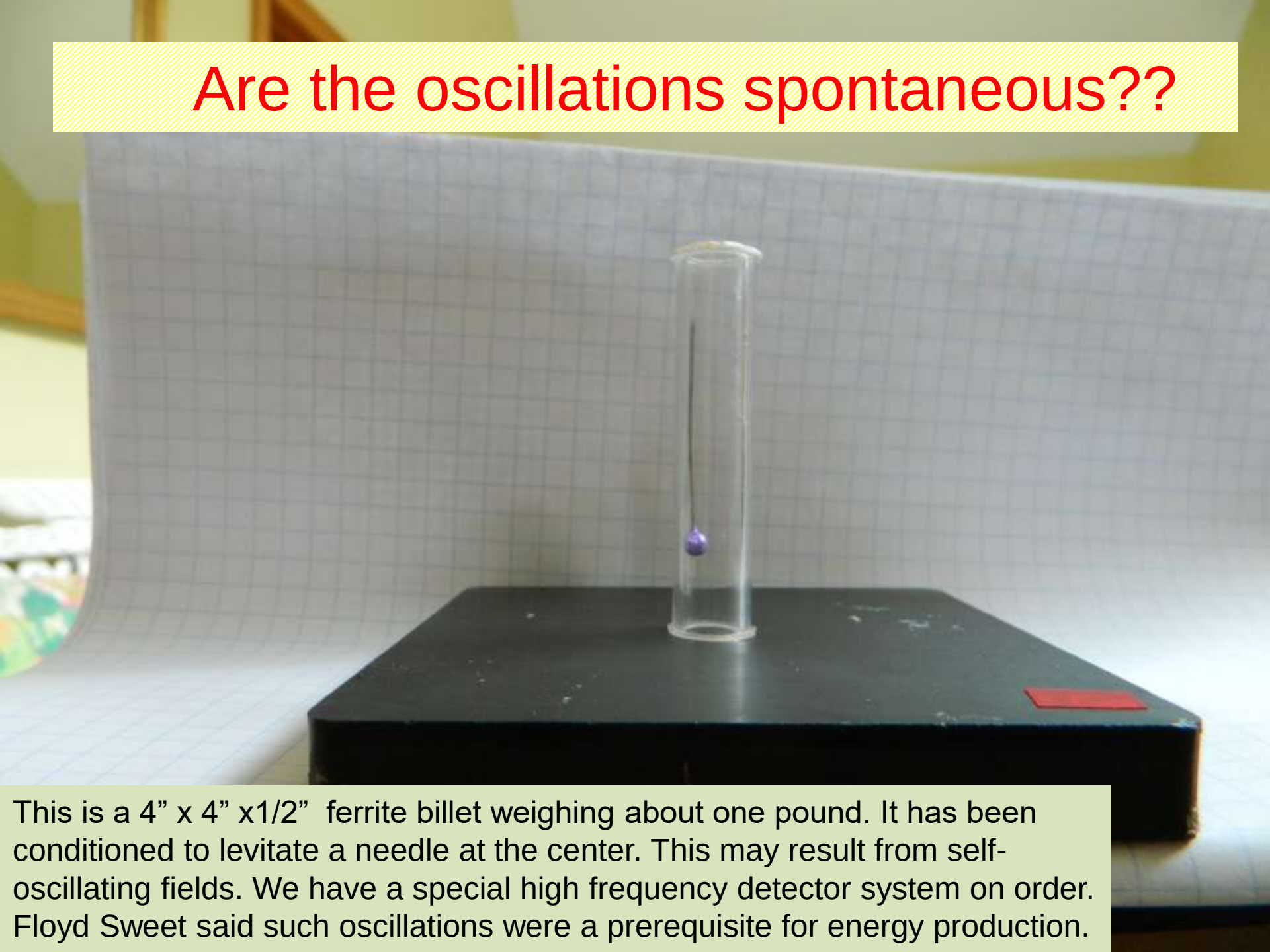


Battery pack at 165 Volts

27 watts of power charging the battery for 7 days

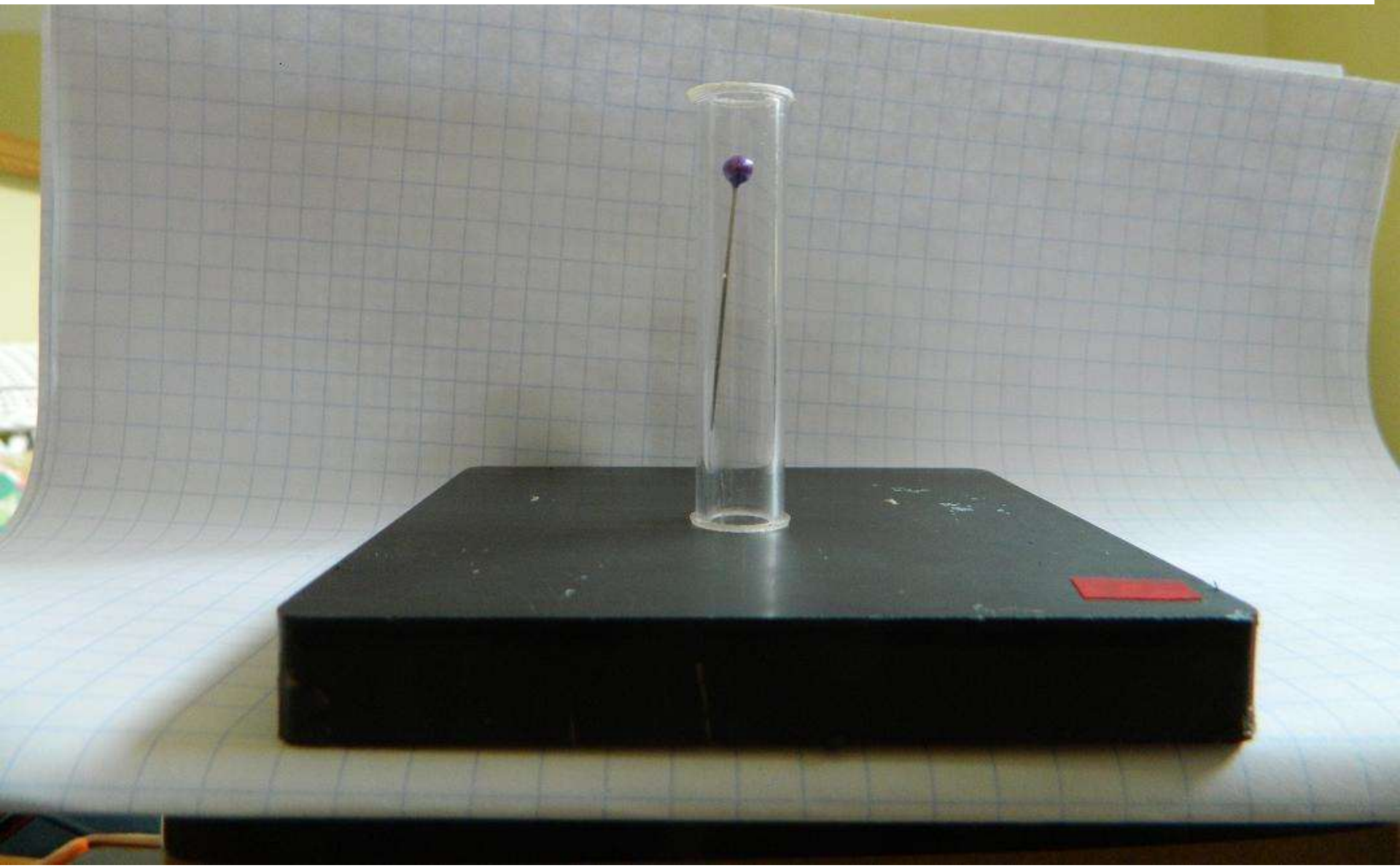
Date/Time
9/26 – 9/29/11

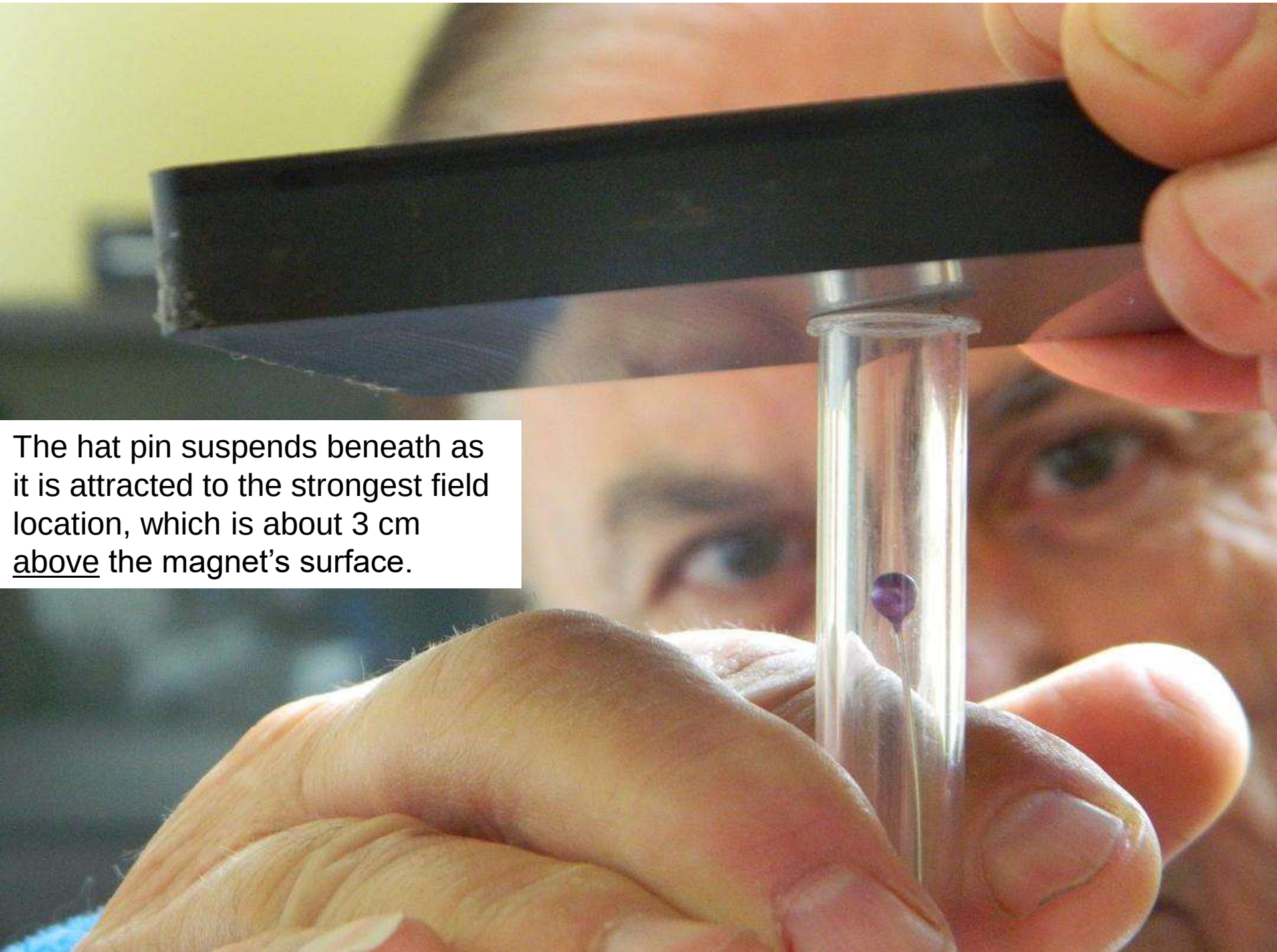
Are the oscillations spontaneous??



This is a 4” x 4” x1/2” ferrite billet weighing about one pound. It has been conditioned to levitate a needle at the center. This may result from self-oscillating fields. We have a special high frequency detector system on order. Floyd Sweet said such oscillations were a prerequisite for energy production.

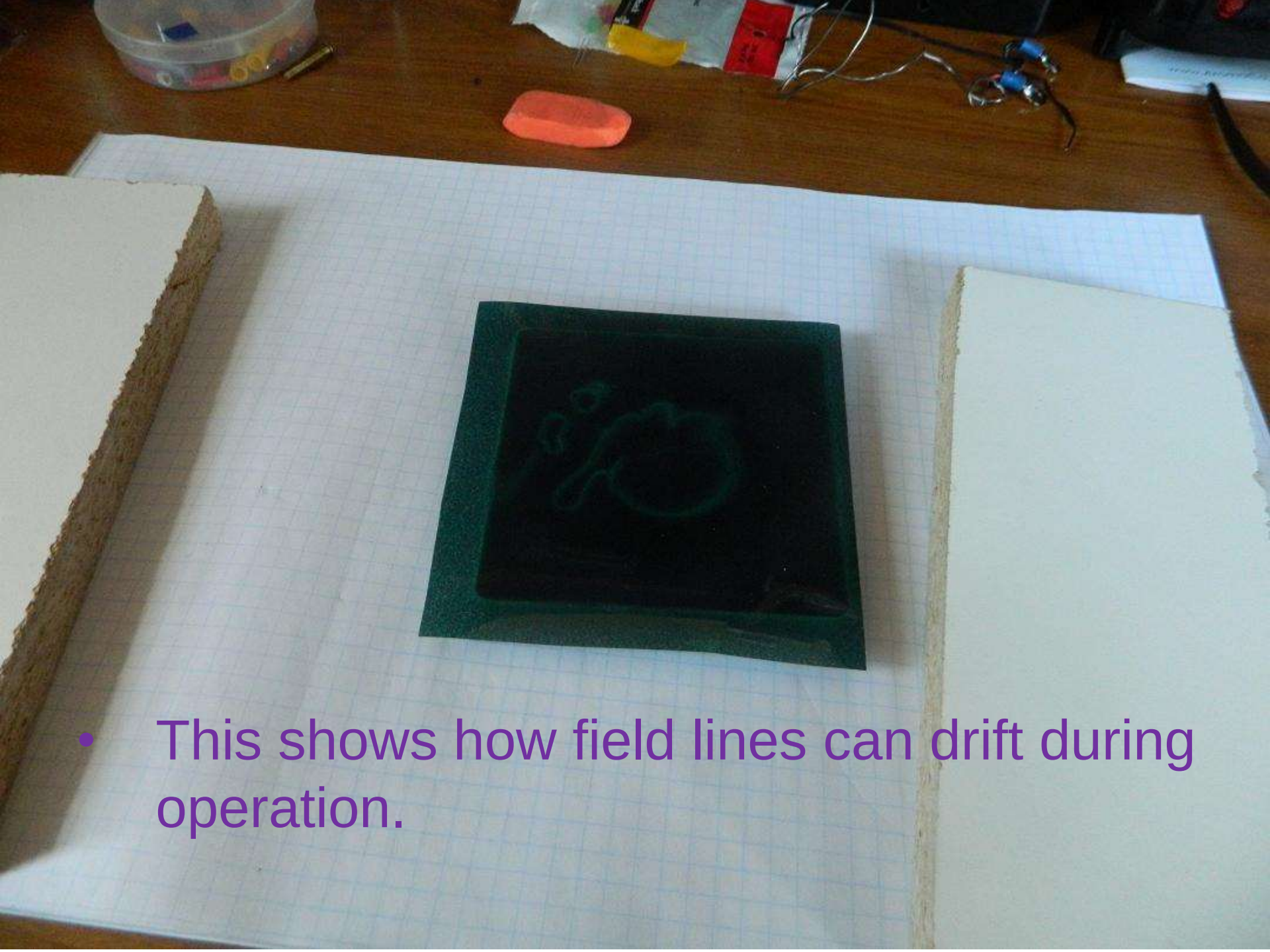
The ferrite allows for conditioning multiple fields in the single billet.
This configuration gives a field condition where the strongest field is 3 cm above the surface. The needles are drawn to the strongest field position?



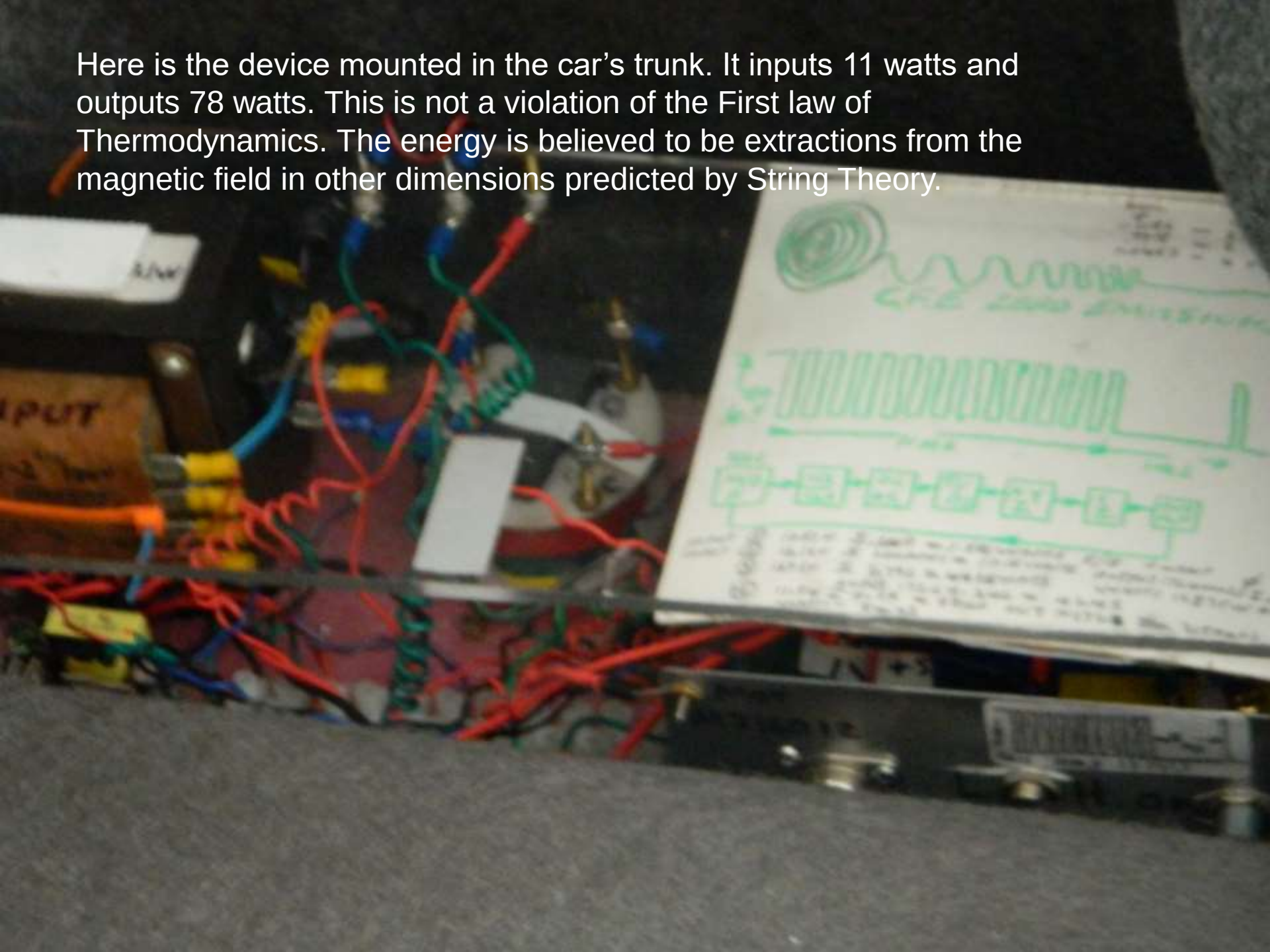


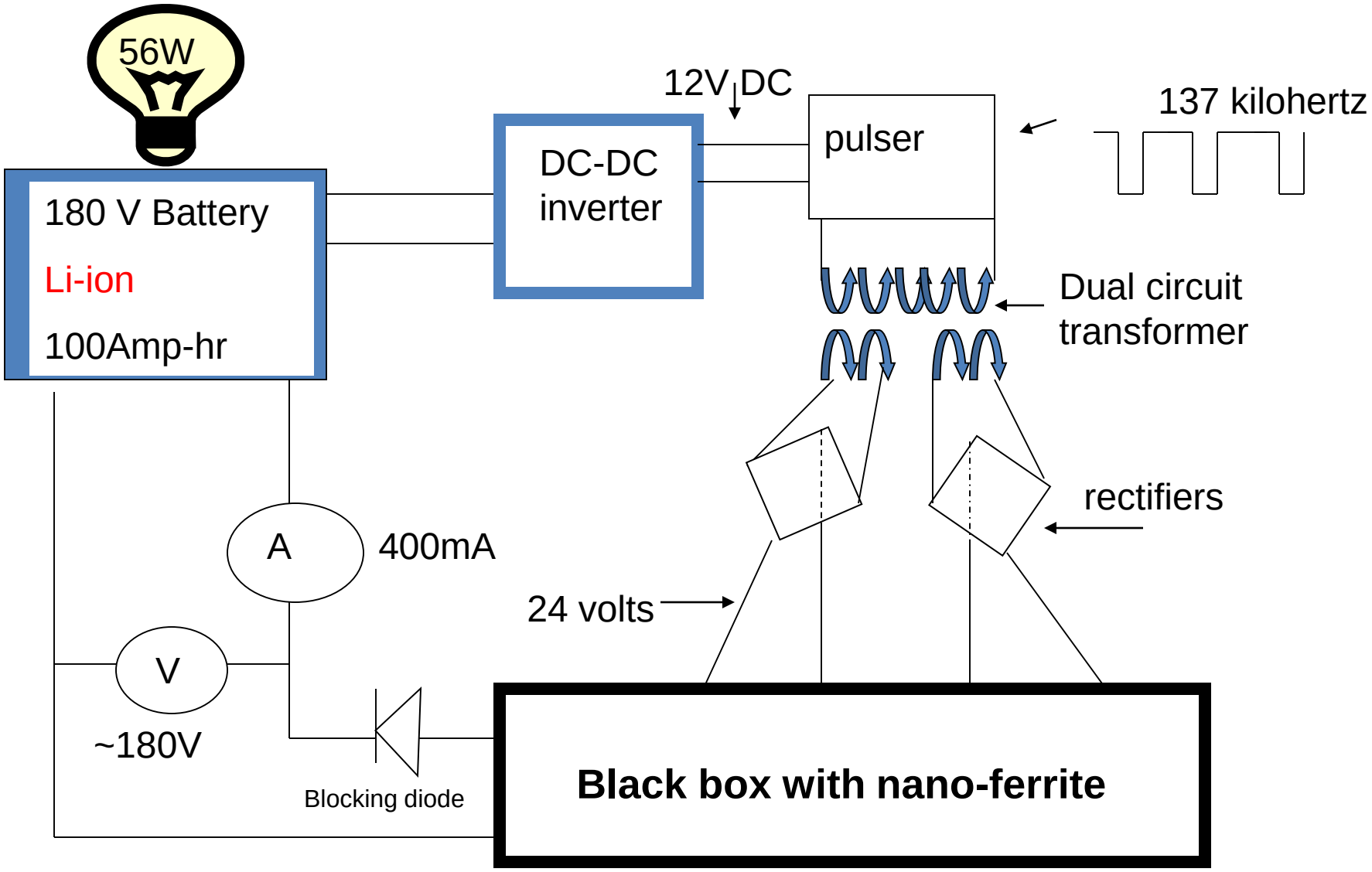
The hat pin suspends beneath as it is attracted to the strongest field location, which is about 3 cm above the magnet's surface.

Unmagnetized billet once a cylindrical NdFeB permanent magnet induce a pole in the center.



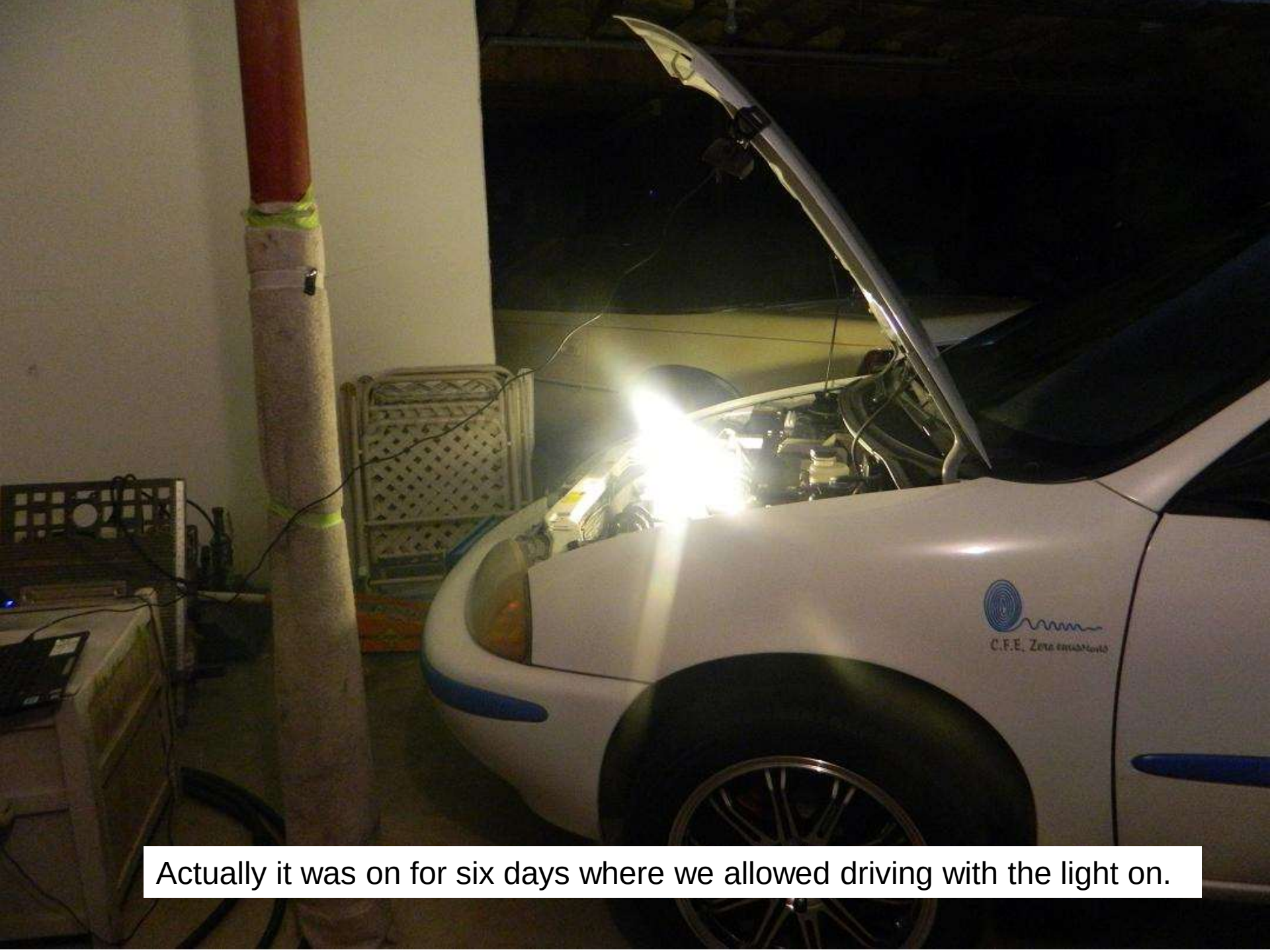
- This shows how field lines can drift during operation.


Here is the device mounted in the car’s trunk. It inputs 11 watts and outputs 78 watts. This is not a violation of the First law of Thermodynamics. The energy is believed to be extractions from the magnetic field in other dimensions predicted by String Theory.

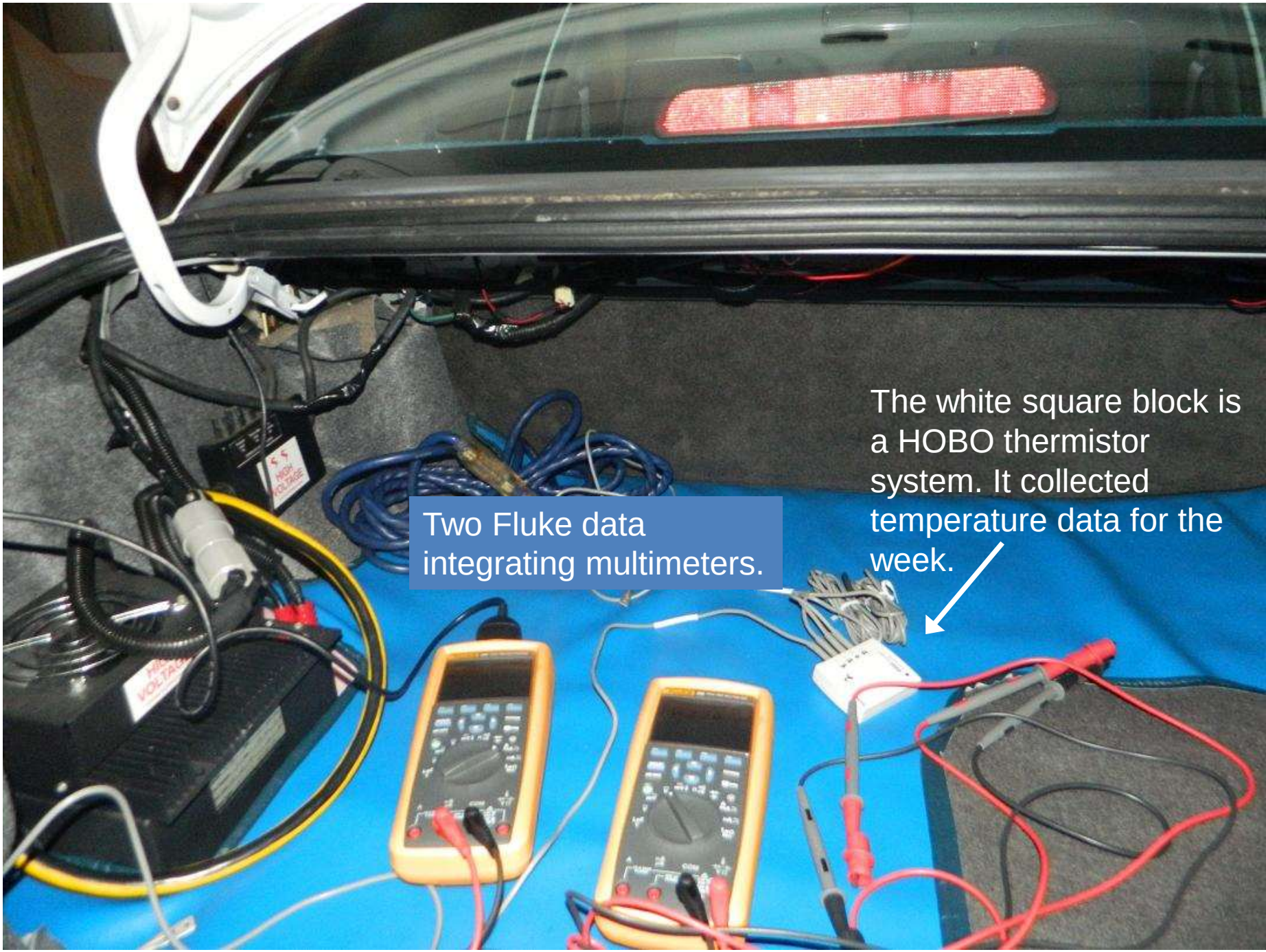


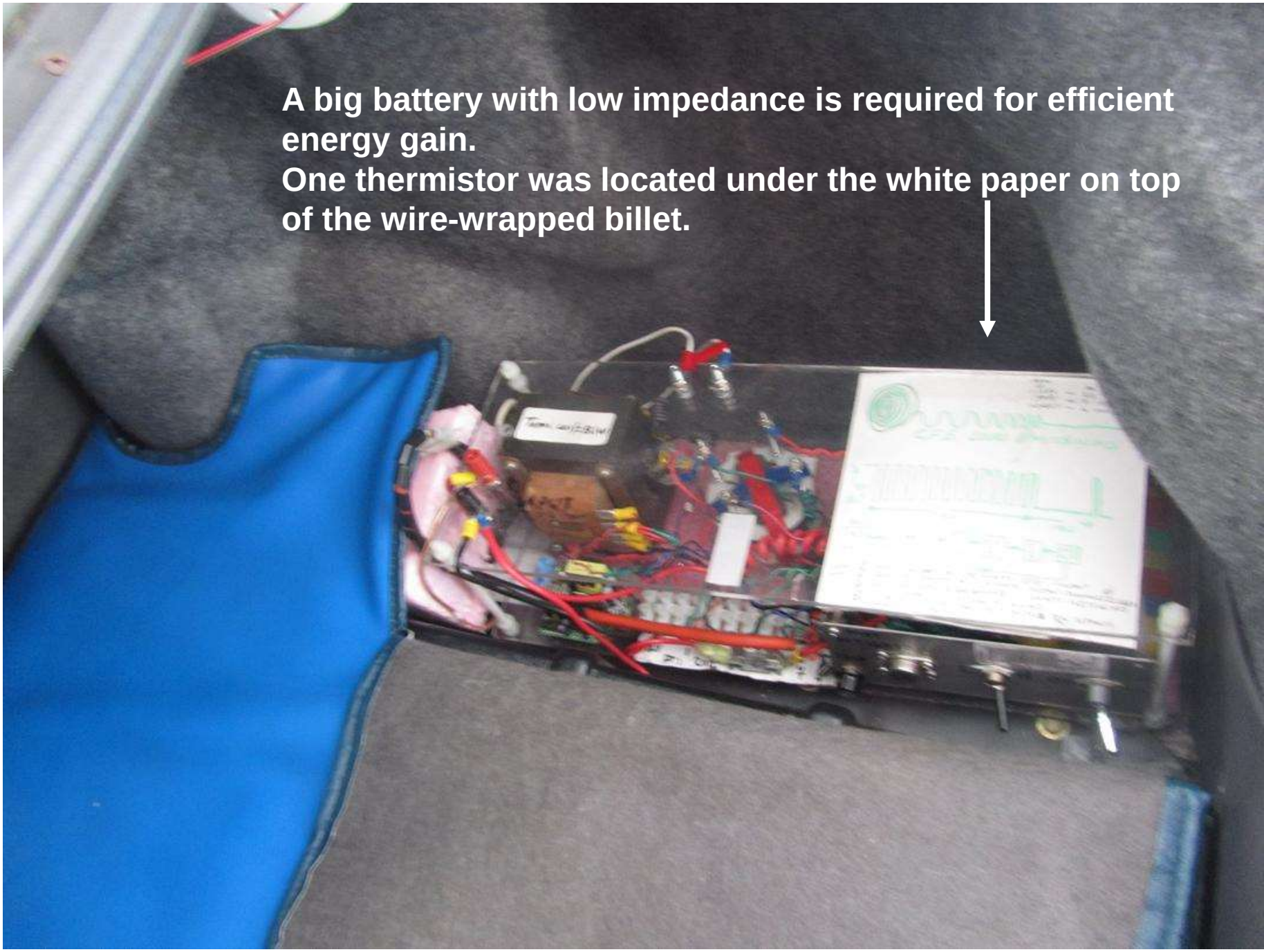
- An oscillating current is impressed on battery. Super important point here. The billet has a natural frequency of magneto-elastic origin when it isproperly conditioned. We try to resonate with that frequency.

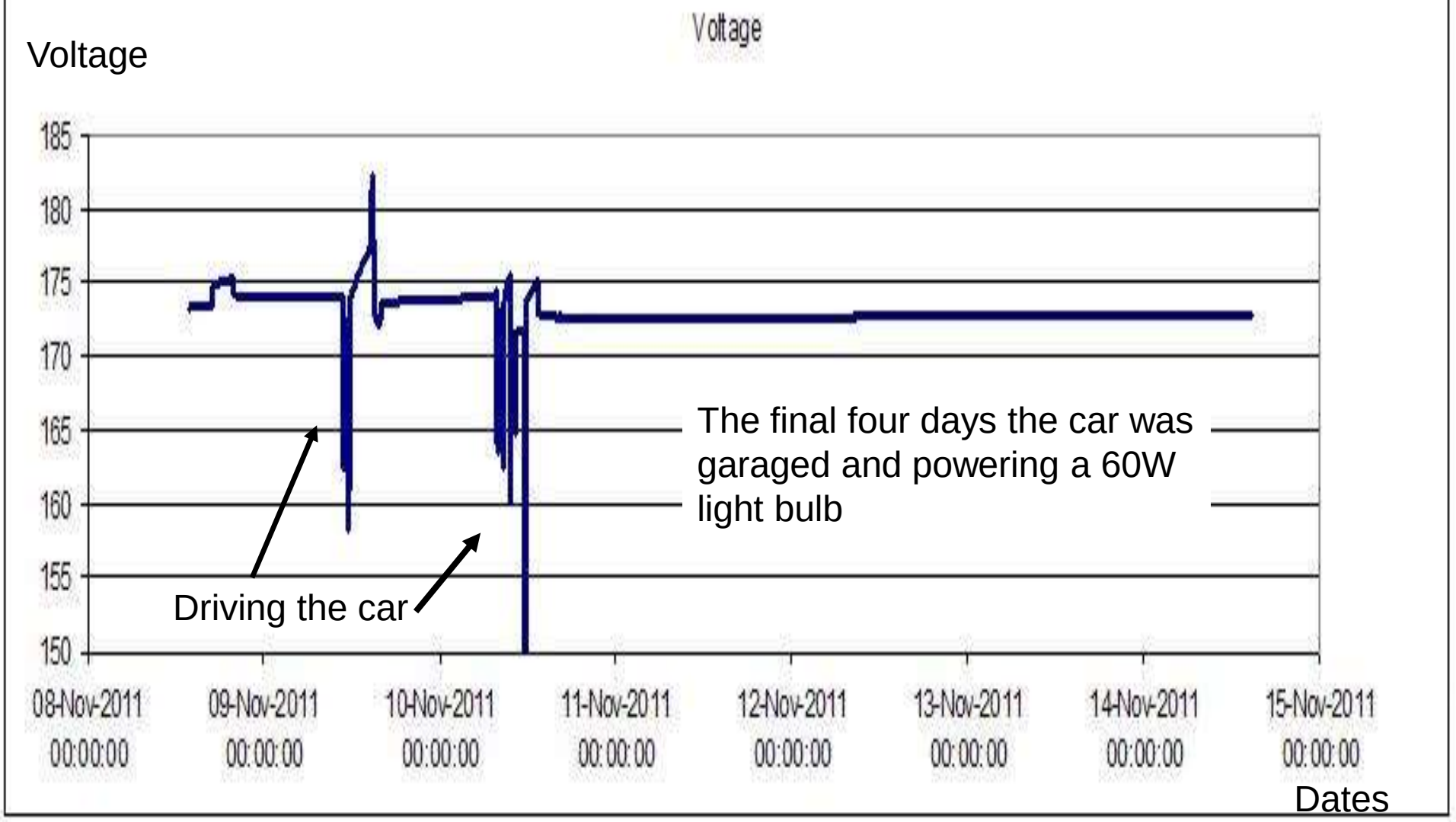

This bulb is consuming **57 watts of power** over a four day period. Nearly 20 megajoules were extracted from the battery and the voltage did not decrease. In fact, it increased by about ½% approximately.



Actually it was on for six days where we allowed driving with the light on.


Two Fluke data integrating multimeters.
The white square block is a HOBO thermistor system. It collected temperature data for the week.

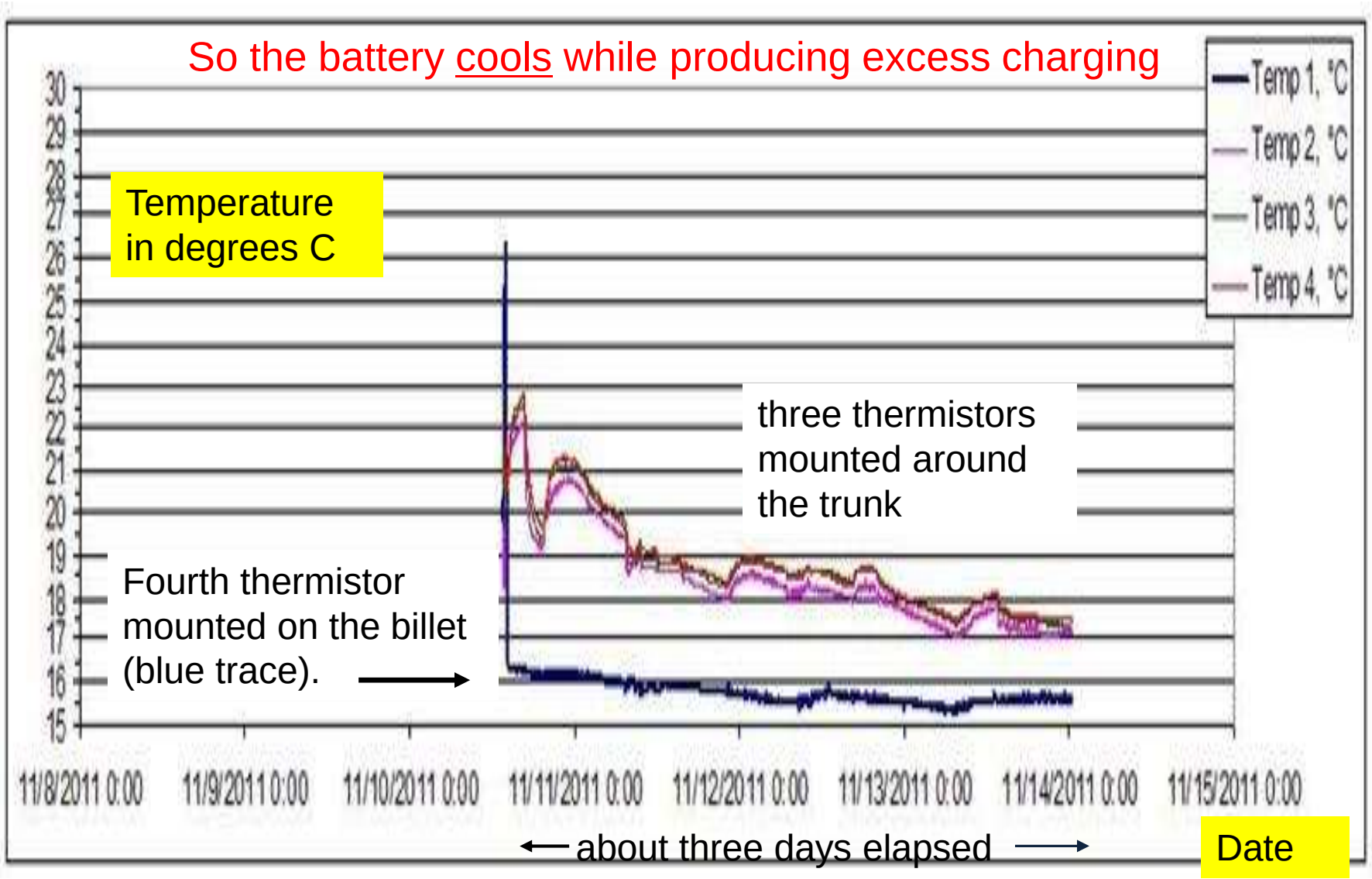

A big battery with low impedance is required for efficient energy gain.
One thermistor was located under the white paper on top of the wire-wrapped billet.



Power output was increased from 27 watts to 60 watts.

Battery pack voltage increased from 165 volts to 180 volts.

Then, ΔPower / ΔV = 33/15 = 2.2 Amps increase (since P = I V).



Sub-Ambient operation of the ferrite core

Four Day Light Bulb Test

57 watts of continuous light output

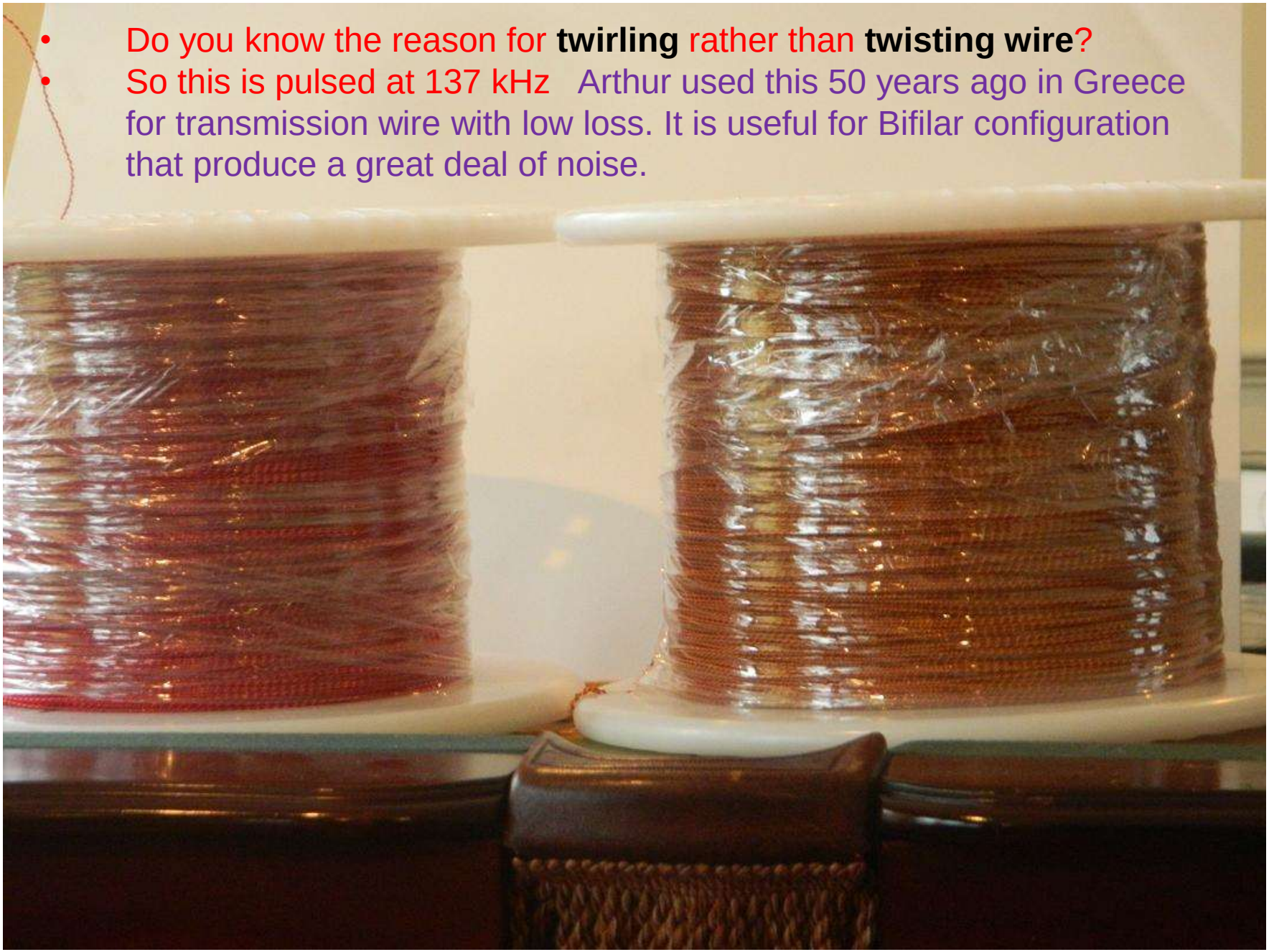
Battery voltage increased slightly

Manelas Device has been producing 60 watts

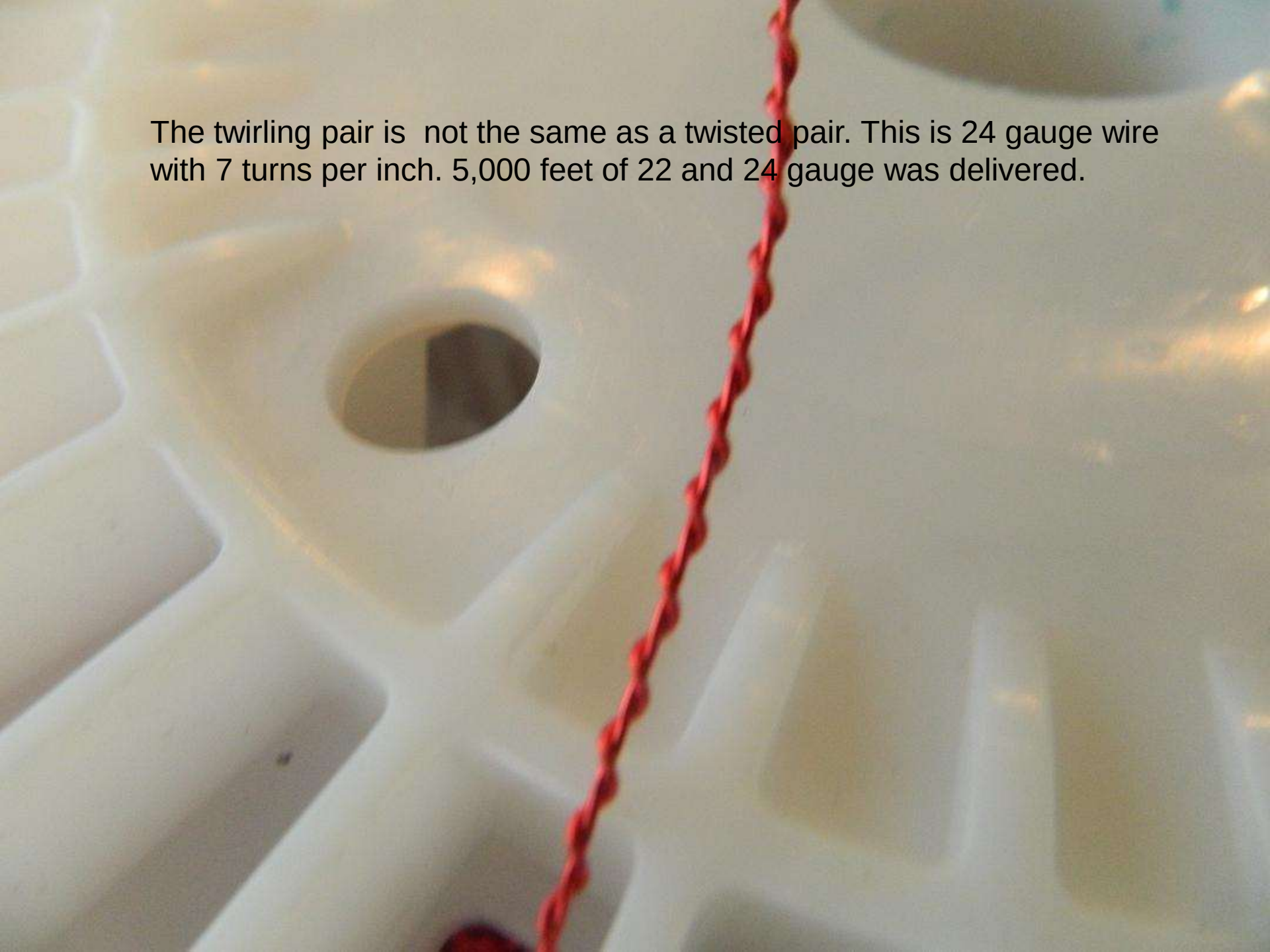
It has been operating for the past 20 months.

Nanograined $SrFe_{12}O_{19}$ is hypothesized

- Why this ferrite? Sr is a high spin element (87Sr, 7% abundance has 9/2 ground state spin and a nuclear magnetic moment).
- This was the actual ferrite Arthur used in my testing. We used EDAX to discover that it was strontium rather than barium ferrite.



- Do you know the reason for **twirling** rather than **twisting wire**?
- So this is pulsed at 137 kHz Arthur used this 50 years ago in Greece for transmission wire with low loss. It is useful for Bifilar configuration that produce a great deal of noise.



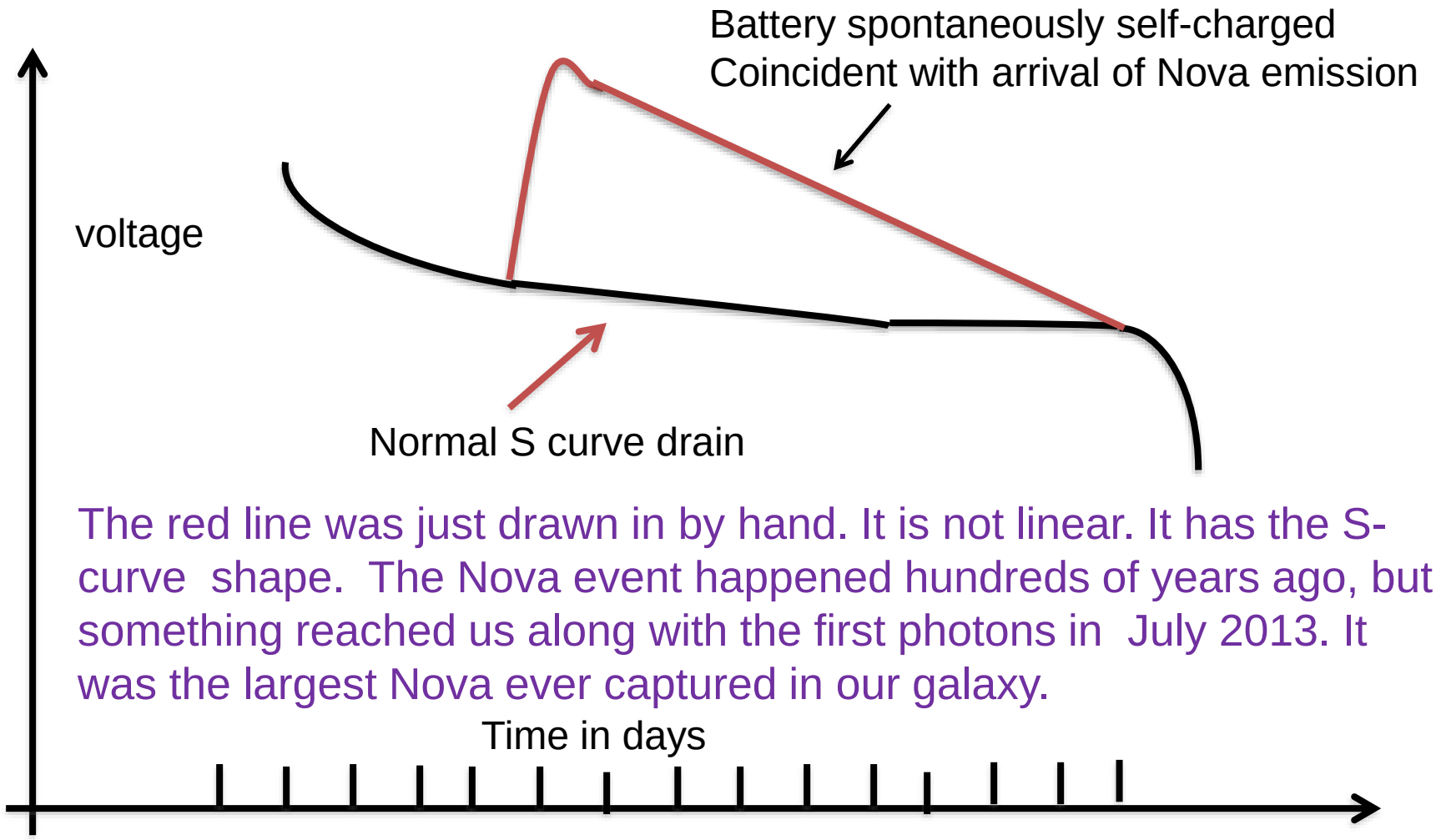
The twirling pair is not the same as a twisted pair. This is 24 gauge wire with 7 turns per inch. 5,000 feet of 22 and 24 gauge was delivered.

Nano-Ferromagnetism

- Ferromagnetism is a collective behavior
- Nanograins (3-12nm) impose collective action of the nuclei to vibrate cooperatively
- Clean electrical energy production results
- The nature of the vacuum is important
- Experiments outpace theoretical understanding

This device exceeds our ability to account for the continuous energy output. Our model is now focused on unique physical properties arising below 12 nanometers.

65 volt battery drain with 5 solenoids at 10 watts



- The red line was just drawn in by hand. It is not linear. It has the S-curve shape. The Nova event happened hundreds of years ago, but something reached us along with the first photons in July 2013. It was the largest Nova ever captured in our galaxy.

Thoughts and Issues

Assuming the results are correct:

-In what other experiments would or should this effect show up over the years?
-Are there anomalies in other magnetic devices that support something interesting going on?
-On the surface the effect seems to be related to cosmology
-Dark matter idea fits (magnetism, conversion of axions to photons and a photoelectric effect providing charging current)
-Don't see how dark matter cools the battery yet so that may exclude dark matter
-Cooling could be a result of a cooling pipe action from the core to the outside induced by directional phonon transport caused by the resonance. So cooling could be an important clue **The battery does not cool. The billet cools.**
-137 kHz is way too low a frequency to be related to particle physics ideas but 137 kHz could be resonance that excites much higher frequencies in the nano-ferrite so 137 kHz is a red herring regarding an explanation. Nanoparticles resonate in the THz range, or meV to an eV energy
-I cannot decipher how one interacts with the E&M fields and how to exploit vacuum energy. **I don't know. Resonance with some property around 135 kHz worked in 2011-2012.**
-Don't know what to make of the solar flares and supernova. The flares can interact in real time. The supernova takes years to reach earth at the speed of light.