Courtesy translation

Final report regarding our examinations on " Vinyl Compound loses weight in Electromagnetic Field “ experiment, to disprove " Fran De Aquinos “Kinetic quantum Theory of Gravity "

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1. The experiment according to Fran De Aquino

1.1. Theory

Since 2002 Prof. Fran De Aquino (Maranhao State University, Physics Department, S. Luis/Ma, Brazil) consistently released different versions of his "Kinetic quantum Theory of Gravity", with measurements and results of experiments he carried out and verified his theories in papers listed below.

Published in 2002: http://www.stardrivedevice.com/Kinetic2.pdf
Published April 2005 : http://arxiv.org/ftp/physics/papers/0212/0212033.pdf
Fran De Aquinos home page: http://users.elo.com.br / ~ deaquino/
2004 De Aquino pronounced in his report " Vinyl Compound loses Weight in Electromagnetic Field ". When using a disk made of vinyl "Duracap 86103 (Vinyl Compound, flexible FPVC manufacturer PolyOne Inc.) "that under certain and easy comprehensible conditions a decrease in weight up to 10 kg occurred. Results are confirmed in listed tables and diagrams.

1.2 Description of De Aquino original assembly

The experimental assembly as well as the results are described in detail by De Aquino.

Well-equipped laboratories are capable to reproduce the experiment without any problems.

Unfortunately, has the experiment " Vinyl Compound loses Weight in Electromagnetic Field "been removed from De Aquinos website. For reference purposes we included in our report the original document as a scan document http://www.gravitation.org/English/Experiments /Beschreibung von DeAquino PDF-Version.pdf

Describing in brief the principle of the experiment

Placing a disk of Vinyl compound "Duracap 86103" (diameter = 100 mm, thickness = 5 mm) between two aluminum disks (diameter each 100 mm, thickness each 1 mm) makes a disk capacitor.

The capacitor is placed between two plexiglas disks, each 102 mm in diameter and 3 mm thick.

The arrangement is exposed to an electromagnetic field, with a field strength larger than 200 V/m (i.e. larger than 2 V/cm), with a frequency of 1 µHz. The corresponding sinusoidal alternating voltage, generated by a sinus-generator with a peak voltage up to 20 V and a frequency of 1 µHz produced.

Attached to the capacitor is a weight of 15 kg, both are placed on a digital balance. The complete structure is within a Faradays cage.

De Aquino claims, that approx. 6,6 hours after switching the generator on (with a voltage of approx. 2.2 V at the capacitor) the digital balance indicates a weight reduction of approx. 55 g (related to the time when switched on).
After approx. 8,2 hours (at 2.7 V) the weight reduction is approx 110 g, after 2,9 days (approx.. 20 V), i.e. after a quarter period duration, by approx 10 kg.

2. Experimental set-up of IGF

2.1. Fabricating the Duracap disk

A prefabricated Duracap disk, with the required compound specifications was not commercially available. We purchased from PolyOne (Vendor) granulates and manufactured the disk according to the appropriate data sheet. (see: www.matweb.com/search/SpecificMaterial.asp?bassnum=PH1PO0024)
The Duracap granulate 86103, had been delivered in a grain size of approx.3x4x2 mm(cuboidshape) (see Fig. 1), making a fabrication of a steel pressing tool (see fig. 2) necessary.
The pressing tool, together with the Duracap material was heated up in a electrical furnace (see Fig. 3). The Duracap material was pressed. (see Fig. 4) and cooled down. The Duracap disk loosened and removed from the pressing tool. (see Fig. 5).

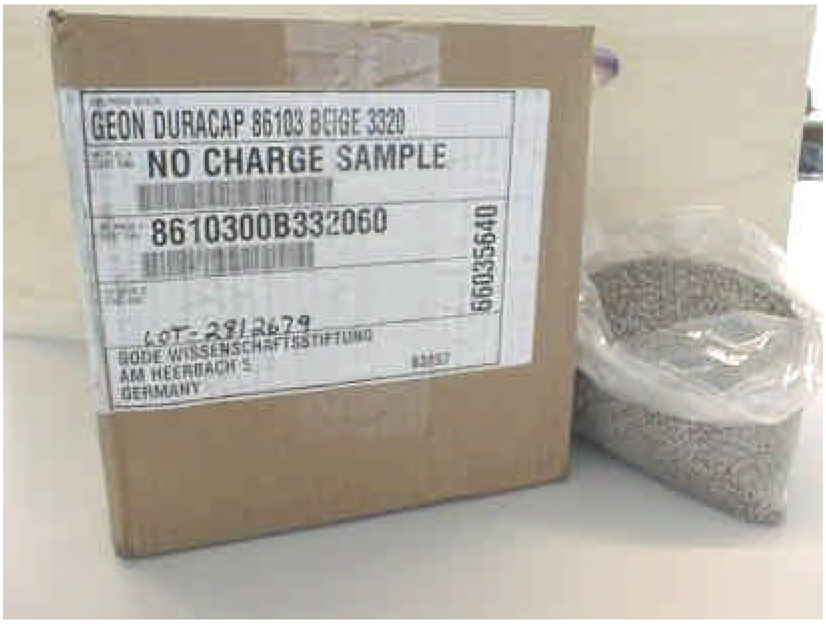

Fig.1: Duracap granulates on delivery

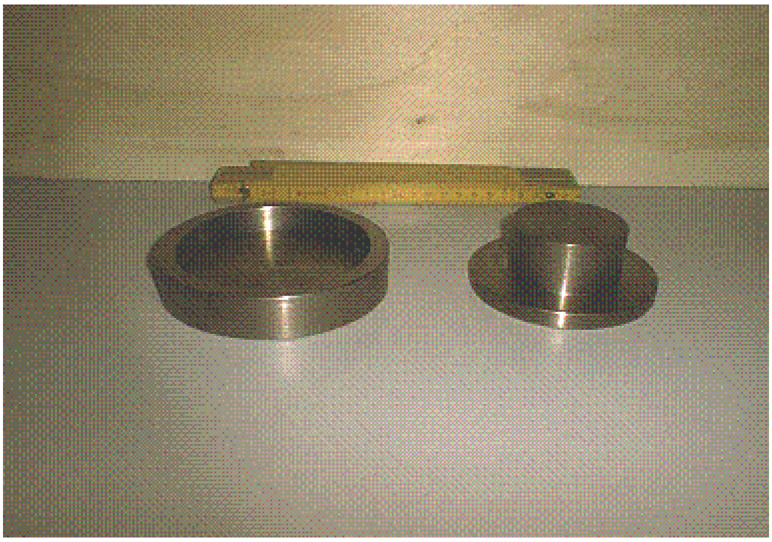

Fig. 2: Pressing tool, left of lower part, right of upper part

Fig. 3: Pressing tool in heating process together with Duracap granulates

Fig. 4: Pressing the heated up Duracap material

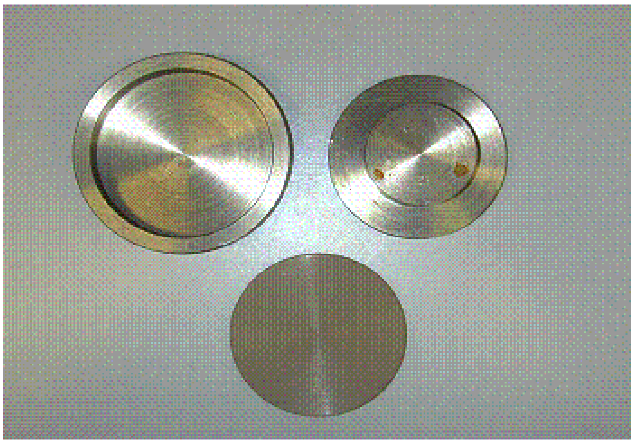

Fig. 5: On top: empty pressing tool
Below: Pressed Duracap disk,

2.2. Structure of the plate capacitor

The plate capacitor was recomposed as indicated by De Aquino (see De Aquinos sketch on page 5, as well as Fig. 6, Fig. 7 and Fig. 8).

Fig. 6: Left: Plexiglas disks, center: Aluminum disks,
right: Duracap disk

Fig. 7: Single components of the plate capacitor in exact order

Fig. 8: The completed plate capacitor (without connecting cables),
compare size with match on left side

2.3. Balance assembly

De Aquino used (see sketch page 5) a balance, with a capacity range large enough to weigh the plate capacitor as well as a 15 kg - weight at the same time.
De Aquino provides no data concerning the balance accuracy.
The scale we used, was a smaller but very precise weighing laboratory balance. (see Fig. 9), with a capacity of maximum 610 g, thus making a beam balance construction necessary.(see Fig. 10 and Fig. 11).

Fig. 9: Industrial laboratory balance

Data sheet of laboratory balance:

Manufacturer: Kern
Model:KK 600-3
Balancing range: to 610 g
Resolution: 0.001 g
Linearity: +/- 0.0015 g
Reproducibility: 0.0006 g
Ambient temperature: +15 °C to +30°C
Humidity: max. 80 % non-condensing

The balance is equipped with a nine pole serial interface, with common data format and corresponding software, available through manufacturer.

After consulting the manufacturer, we installed a connector socket for analogue data logging.

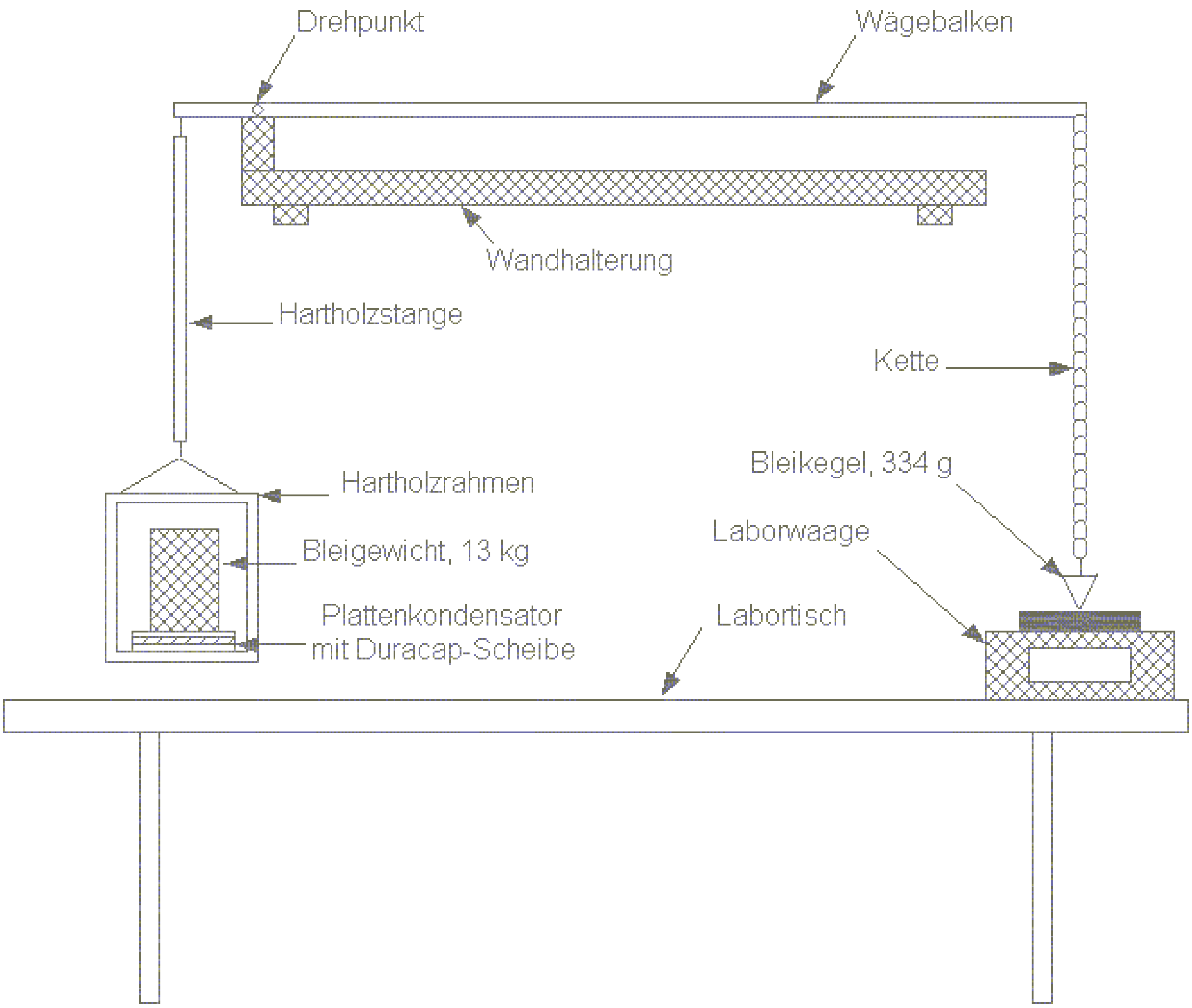

Fig. 10: Balance assembly with beam balance construction (sketch).
The length of the left lever arm amounts to 40 mm, right lever arm 1010 mm.

Fig. 10: Balance assembly with beam balance construction (photo),
the copper cylinder in center of picture will be part of the Faraday cage

The applied voltage of the 1 µHz – sinusoidal voltage, as well as the test measurement at the plate capacitor, was implemented through extreme thin wire wrap lines (30 AWG), and thin aluminum stripes (see Fig. 11), (electrical conducted) fastened to the aluminum disks of the capacitor.

The Wire Wrap lines were passed by the capacitor along the hardwood bar up to the center of motion of the beam balance, then in a large loop to the generator and voltmeter, minimizing the influence of the wire wrap lines to the weight detection unit.
To ensure that the sinusoidal voltage actually reaches the condenser, values were measured directly at the condenser plates.

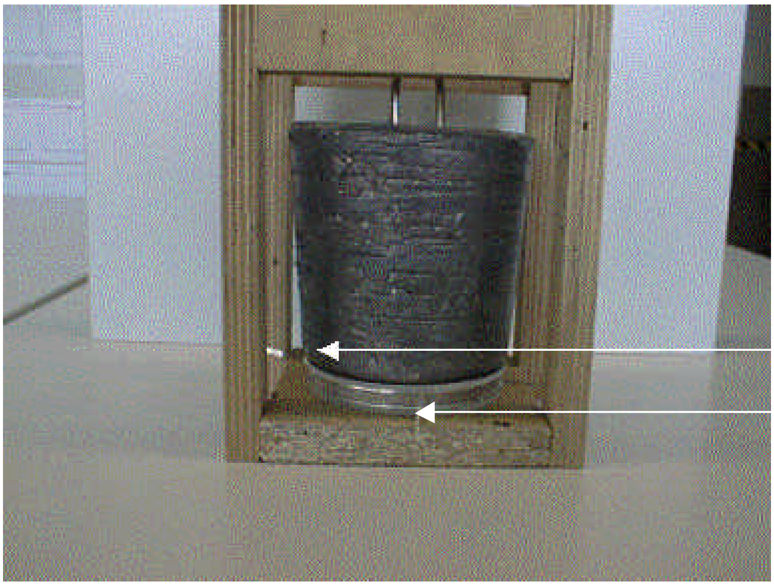

Fig. 11: 13 kg - Weight on plate condenser

Fig. 12: Adjusting the copper cylinder, the wire wrap lines are not installed, see group of lines at right rear at hardwood frame.

Fig. 14: Assembling the Faraday cage. The copper cylinder is placed on a grounded steel plate sealed with Cu foil .See picture above. The Hardwood bar is plugged through with glued on wire wrap lines. On the right of the copper cylinder are the wire lines, leading to measuring instrument and generator. On the wall suspension (not in picture) the mechanical discharge takes place.(Lines are marked with several adhesive stripes for better identification)

Remarks regarding the term "Faraday cage":

We are aware of the fact, that the term "Faraday cage “ used by us and De Aquino , is not correct. To produce a safe electromagnetic shielding, no lines should lead out or into the cage

The next two points convinced us to decide to build a "Faraday cage":

One, to simulate De Aquinos readings.

Second, to minimize the impact of air flow on the free swinging assembly.

2.4. Calibrating the balancing system
2.4.1 Temperature behaviour of experimental assembly

According to the manufacturer data sheet of the laboratory balance " Kern KK 600-3" the indicated measured value reading of the balance depends on the ambient temperature.
A temperature drift applies in general to all digital balances of that and similar types, according to information from independent manufacturer .
Manufacturers partially carry out temperature compensations but not in such narrow temperature ranges, that the temperature drift of the balance needs no attention.

De Aquino supplied no data concerning the behaviour of the balance he had in use .

In the past we gathered varied experiences in our experimental activities. Nearly each laboratory assembly showed a dependency on temperature, including the beam balance construction. Necessitating to first examine the temperature behaviour of the experimental assembly as well as the balance.

In conducting a series of 38 measurements, with durations lasting usually at least one day (often several days), we determined the temperature behaviour of our assembly.
The day/night heat reduction of the building had a substantial influence on the indicated measured value of the balance.

A typical example reflects diagram /Fig.15. The weight indicator of the balance, in dependence of the ambient temperature, without connected sinus-generator.
On the left a 13 kg weight, the Duracap capacitor of approx. 53.5 g, and the hardwood frame at the beam balance. With a calibrating weight on the balance (see Fig. 10, above, left of picture center), the indicator value of the digital balance, was adjusted to approx. 11,1 g prior to starting the measurements.

The behaviour, documented at Fig. 15, was reproducible at any time. It is very obvious that the upper black curve of the weight indicator follows the lower blue curve of the ambient temperature (with a small temporal delay).

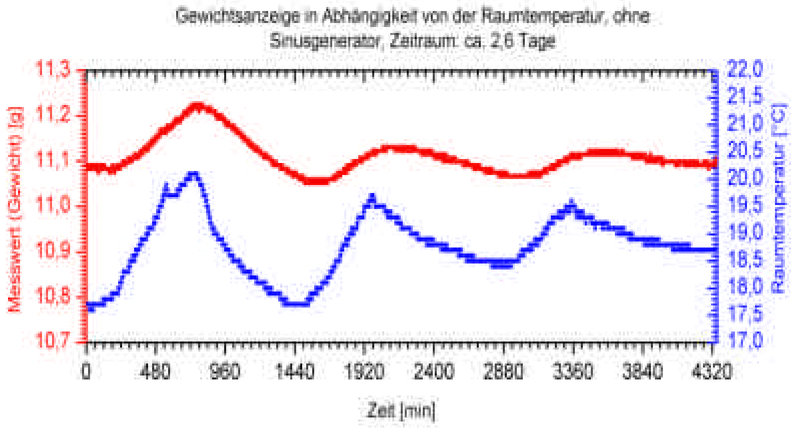

Fig. 15: Weight indicator of the balance in dependence of the ambient temperature, without connected sinus generator

Result: An ambient temperature fluctuation of approx. 3,5 Celsius causes a fluctuation of the measured value of up to 150 mg.

2.4.2 Load curve with standard weights of 1g and 50 g

To test effects of "weight" alterations at the "measuring side", (a weight of 13 kg , the Duracap capacitor, plus hardwood frame) and a standardized 1 g-weight attached. (see Fig. 17) Another time a standardized 50 g-weight (see Fig. 18) was attached.
The measurement results at the balance are as follows:

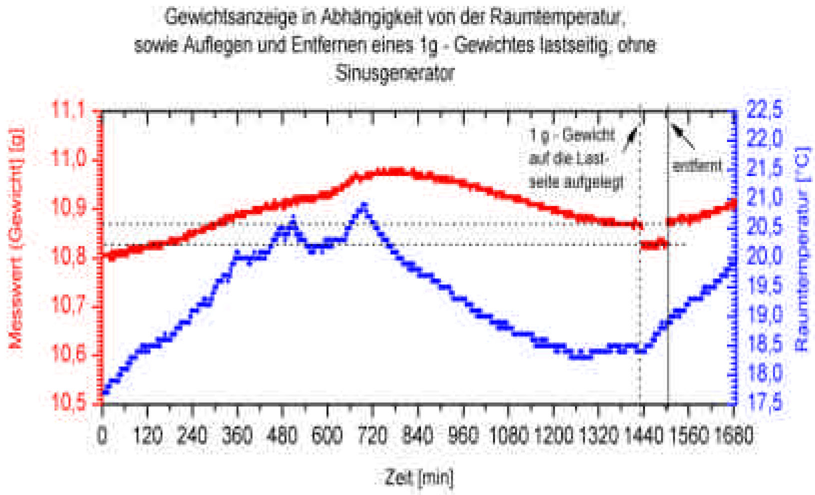

Fig. 17: 1 gr. weight effects 38.9 mg at the measuring side (determined from table value, table not listed)

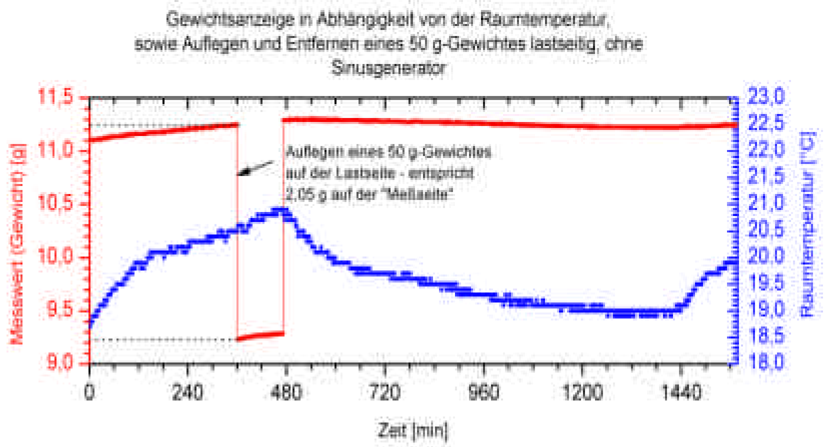

Fig. 18: 50 g effects 2.05 g at the measuring side (determined from table codes , table are not represented).

Documentation on test with 1 g-weight:

Left side (weight side): 1 * 10^-3 kg * 9.81 m/s² * 40 * 10^-3 m =

= <u>0.392 * 10^-3 Nm</u>

Right side (measuring side): 38,9 * 10^-6 kg * 9.81 m/s² * 1.01 m =

= <u>0.385 * 10^-3 Nm</u>

In reference to the (weight side) there is a difference smaller than 2 per cent.

Documentation on test with 50 g-weight:

Left side (weight side): 50 * 10^-3 kg * 9.81 m/s² * 40 * 10^-3 m =

= <u>19.62 * 10^-3 Nm</u>

Right side (measuring side): 50 * 10^-3 kg * 9.81 m/s² * 1.01 m =

= <u>20.31 * 10^-3 Nm</u>

Related to the (weight side) there is a difference smaller 3.5 per cent.

2.5. Generating low-frequency sine function, f = 1 µHz

De Aquino sine function illustrates a period duration of 1 million seconds (1 * 10^6 s). However only the first quarter, i.e. the first 250,000 seconds (equal to 2.9 days)"are used".

During this time the sinus-voltage at the Duracap capacitor rose up to 20 V. Thereafter the measurements series ended.

To produce above mentioned sine function we used a programmable Logic controller (PLC) type S5 of the firm Siemens .
With the corresponding program and utilizing the analogue output, the first quarter period of the low-frequency sine function was realized.
To reach the appropriate voltage level an operation amplifier type 741 with an amplification factor of 2 was connected to the output. Furthermore the output voltage was smoothed over an RC element.
Fig. 19 shows the programmable Logic controller during programming.

Fig. 19: Programmable Logic controller "Siemens S5"

3. Experiment procedures and results

3.1. Voltage at the Duracap condenser with "positively" polarity
3.1. Voltage at the Duracap condenser with "negative" polarity

Chapter 2 describes, that after completion of assembly, preparation and calibration measures, different series of measurements were executed.
Diagrams/Fig. 20 and 21 show the course of the sinus voltage on (more than) 2.9 days, the course of the ambient temperature and the weight behaviour of the assembly.

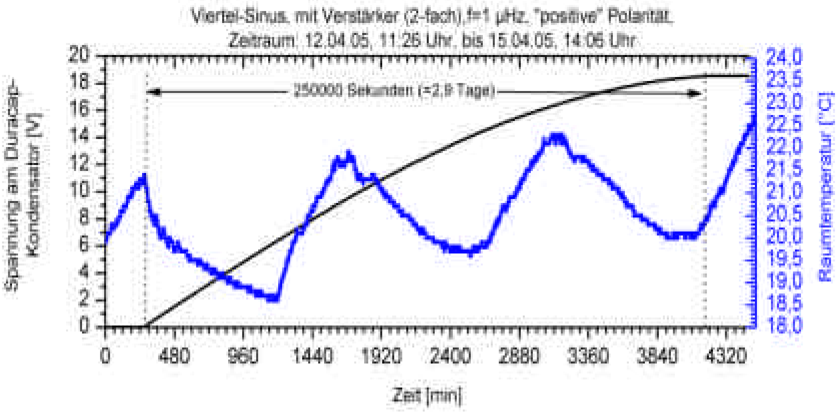

Fig. 20:Voltage at the Duracap capacitor and ambient temperature

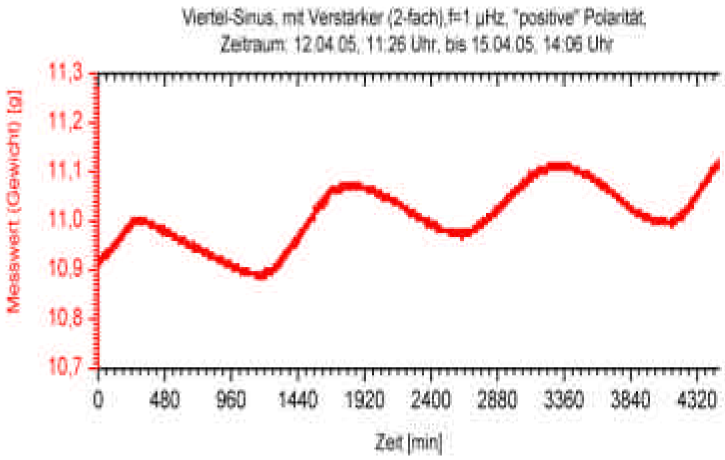

Fig. 21: Course of weight indicator at digital balance.
Result shown at Fig. 20 and Fig. 21:

The weight indicator of the balance follows solely the ambient temperature.
An influence on the voltage at the Duracap capacitor, concerning the weight of the assembly, **is not** observed.

3.2. Voltage at the Duracap capacitor with "negative" polarity

Diagram/Fig. 22 and 23 shows the behaviour of the assembly in reverse polarity of the voltage at the Duracap capacitor (see Fig. 20 and 21).

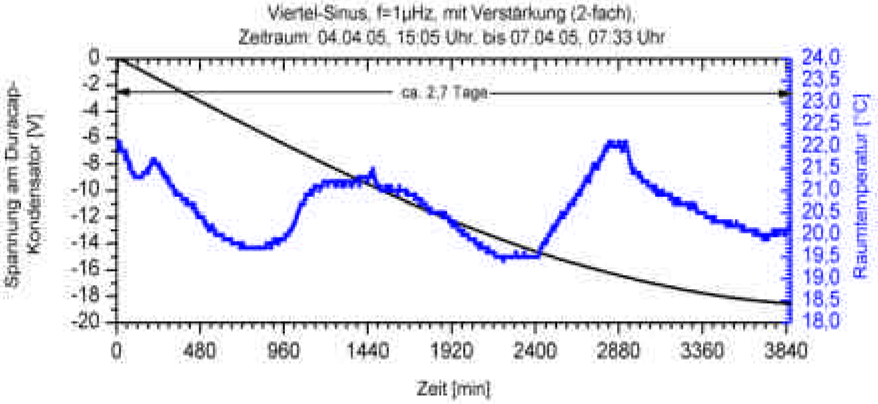

Fig. 22: Voltage at the Duracap capacitor (with reverse polarity) and ambient temperature

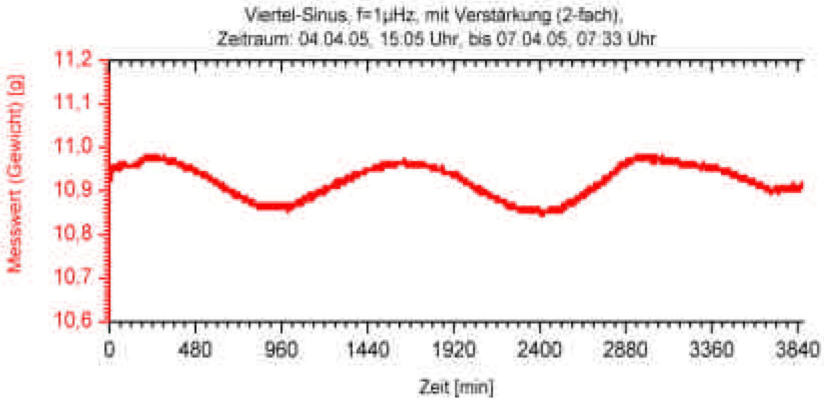

Fig. 23: Course of weight indicator at digital balance (negative polarity)

Result from Fig. 22 and Fig. 23:
The weight indicator of the balance follows solely the ambient temperature. An influence of the voltage at the Duracap condenser on the weight of the assembly is **not** observed, not even with reverse voltage polarity.

Similar, to diagrams/Fig. 20, 21, 21 and in fig. 23 described, we conducted a series of 10 measurements. All series were reproducible at any time with identical results. Effects described, by De Aquino were **never** detected.

Note:
The course of the sinus-voltage seemed to be cascaded (see Fig. 20 and fig. 22) the dissolution was caused by the print media.
During execution of measurements, we concentrated on a "smooth" course of the sinus-voltage.

4. Managing possible errors

Our experiments were executed according to De Aquino specifications. In the preliminary stages and during executing the series of measurements, disturbing influences were eliminated, or considered during evaluation. For example, the temperature drift of the digital balance and/or the entire assembly. Keeping disturbing electromagnetic fields away from the digital balance, preventing draft and vibrations at the surrounding area of the experiment, or guaranteeing that the sinus-voltage is measured at the capacitor and not anywhere between generator and capacitor. These details were not mentioned by De Aquino in his report. Photos documenting his experiment are also missing in his report.

5. Summary

Despite careful implementation of the experiment, the effect described by De Aquino did not occur, not even rudimentary.

6. Equipment

- measuring PC PB 739 pro LINE
- measuring PC 300 GL IBM
- Digital Multimeter M 4460M Voltcraft
- Digital Multimeter ME 42 Voltcraft
- Digital Balance KK 600-3 Kern
- div. Temperature Sensors PT 100 R-S
- S5 Siemens PLC

7. Reference

- http://www.stardrivedevice.com/Kinetic2.pdf

- http://arxiv.org/ftp/physics/papers/0212/0212033.pdf

- http://users.elo.com.br/~deaquino/

- www.matweb.com/search/SpecificMaterial.asp?bassnum=PH1PO0024

- original text of Fran De Aquino, see scan document http://www.gravitation.org/English/Experiments/Beschreibung von DeAquino PDF-Version.pdf

8. Note of thanks

We would like to thank following individuals who contributed in implementing this experiment.

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- Mr. Hermann Eich, Training Department Fa. Wagon Automotives, Waldaschaff.

Waldaschaff, 03 May 2005

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