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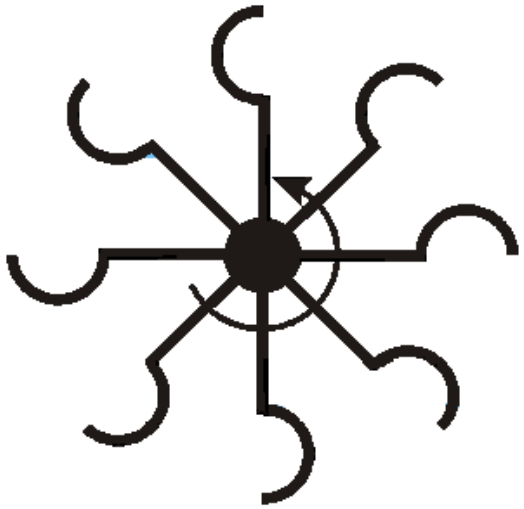
About Energy Conservation, Second Law and Overunity



T. Ludwig (talking)
W.D. Bauer (Powerpoint slides)

Talk on congress DVR in Berlin 28.-29. November 2015

Motivation and Strategy

- Question: How to gain energy by non- fossile means ?
- Method: theoretical testing von perpetuum mobile claims
  backtracing to „normal“ physical principals
- Selection criteria: preference for simplicity and conventional methods
- Work: 1) research of available literature
  2) calculating the system and theoretical analysis
  3) Generalization by diagnostic criteria
- Results: two systems showing overunity
  explained by normal physics

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Contents

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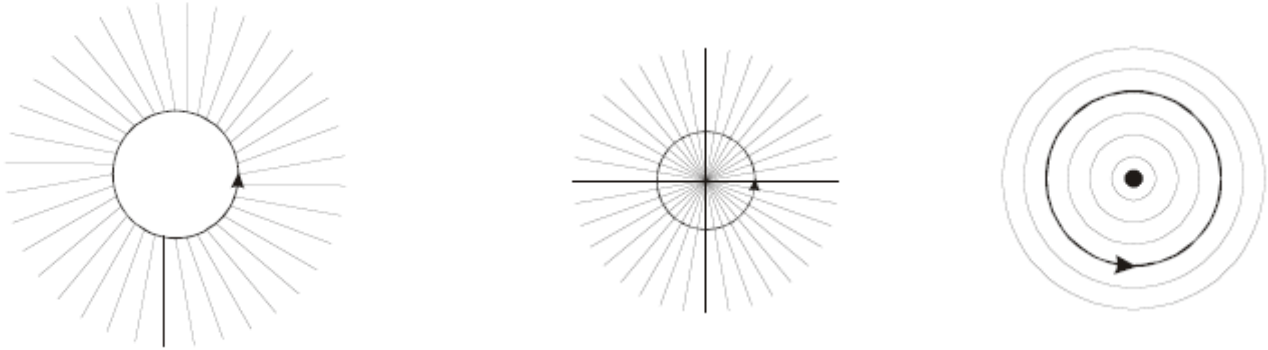
the mathematical classification of alternative systems

Helmholtz theorem:

vector field	=	potential field	+	vortex field
F(x)	=	$F_{sym}(X)$	+	$F_{assym}(x)$

as a Cartoon



Terminology change ➔	system	=	potential system	+	vortex system
	S (x)	=	$S_{sym}(X)$	+	S_{assym} (X)

➔ the Helmholtz theorem allows the „Categorization“ of classical systems

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The physical concretization of the Helmholtz-theorem

	potential systems	vortex systems
energy H(x):	H(x)=$\oint F(x)\,dx=0$ (with F(x)=$\frac{dH}{dx}$)	H(x;t) =$\oint F(x)\,dx \neq 0$ (with F(x) ≠ $\frac{dH}{dx}$)
examples:	mechanics thermodynamics	tide power plant wind wheels, self loading clocks energy harvesting systems (driven by fluctuations)
new:		inverted hysteresis permanent magnetic „perpetuum mobile“ motor
interpretation:	„energy conservation“	„no energy conservation“

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The philosophic analysis of energy conservation

1) naturphilosophy interpretation: (as a „feeling !“)
protagonists: Mayer(1846), Einstein(1905) „formulated as a law!“

2) mathematical interpretation : (formally and rhetorically !)
depends from the choice of system border

3) operational interpretation : (as a working hypothesis !)
protagonist: Helmholtz (1847), „formulated as a principle!“

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4) „common sense“: believing at 1) and working according to 3)

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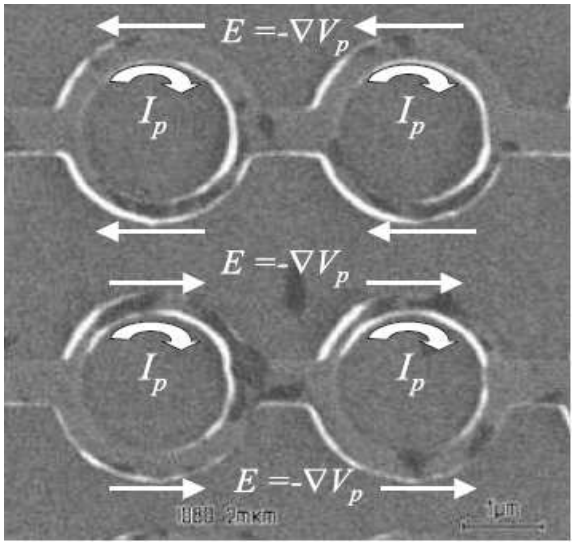
Examples of actual overunity-claims

Nikulov‘s system: supraconducting wires in the magnetic field,
one halfcircles is at the phase border of superconduction
superconduction is switched on-off due to thermal noise
This generates a minimal voltage in x-direction



effect is non-conservative
-> violation of the second law ??

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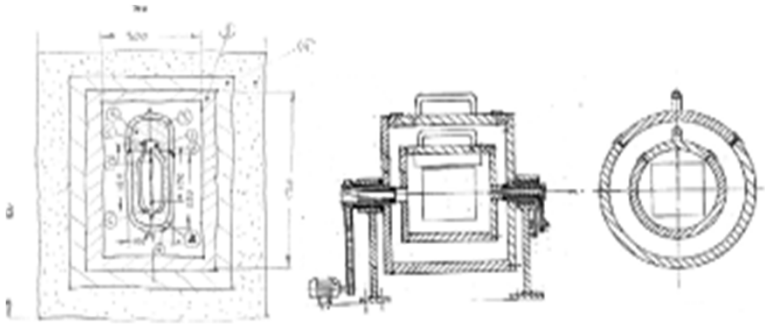
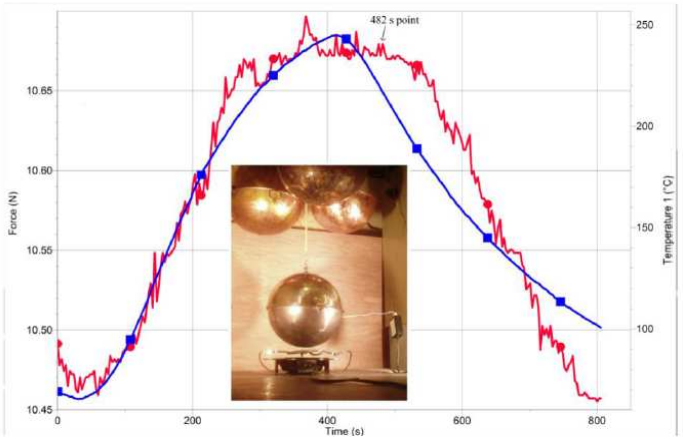
Examples of actual overunity-claims

Graeff‘s system:



Fred‘s system



field generates thermogradient thermogradient generates field

effects are not understandable thermodynamically for the author !

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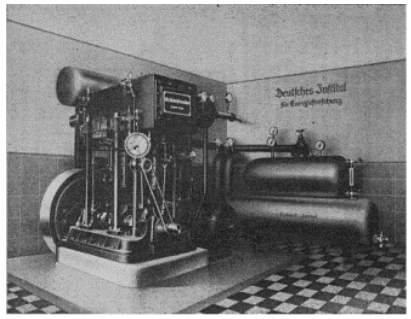
Examples of actual overunity-claims

Irinji- Doczekal-Schaeffer system: followed by calculation
thermodynamical cycle with Water- Hydrocarbon (i.e. Benzene)



own work: stabile und labile theory
the result: measuments of Irinij can be explained
no overunity – claim is really evident !

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About the replacement of the second law

proposal:

If you understand equilibrium thermodynamics as a stabile „fixpoint“ state of a non-linear system, stability behaviour follows from non-linear dynamics of the labile system.
This may explain also any overunity by non dissipative mechanisms

example: the generalized inverted pendelum ,
i.e. dynamically forced cycles with overunity

example: inverted hysteresis

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Known „overunity“ conventionally by fluctuations

macroskopic systems:	tide power plants
	Atmos-clock, self-loading clocks
	energy harvesting, ratchets
thermal fluctuations:	Ratchets ??, Nikulov‘s system
	classical perpetuum mobile 2.Art
quantum mechanical fluctuations:	inverted hysteresis ??

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Inverted hysteresis

definition: orientation of the work area is inverted to loss are
(i.e. a energy gain is suggested)

presence:

at 1) electric and 2) magnetic systems

there exist more than 100 articles refereed
significance is oftenly indirect
oftenly with mistakes

conclusion: you have to read the articles accurately

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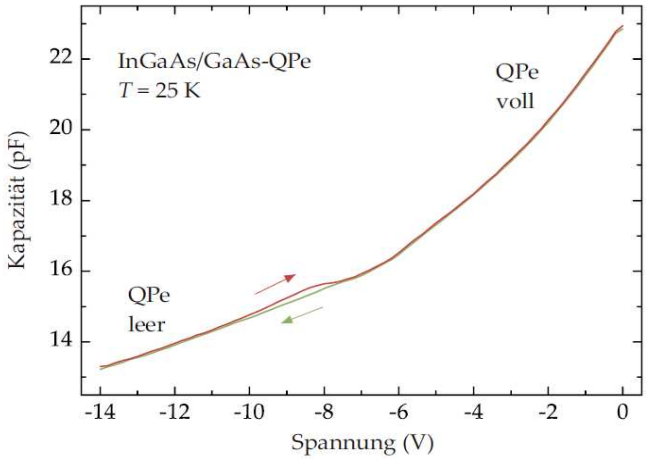
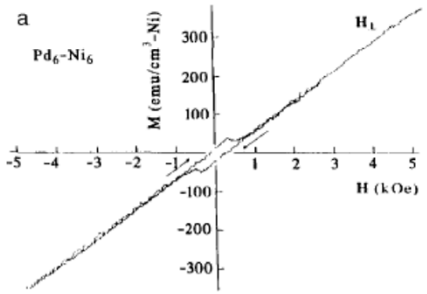
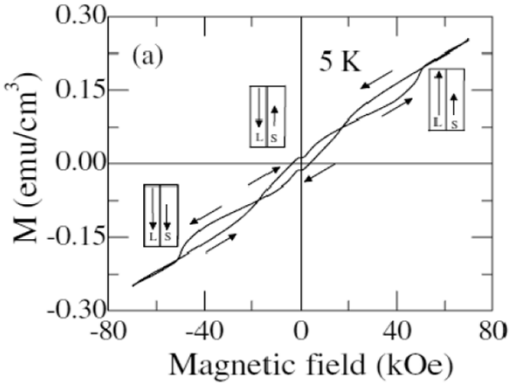
Measuring the inverted hysteresis

typical diagrams (Marent 2009, Poulopolos 1996, Byeon 2004)







p-Storage-FET TU5822 inverted magnetic hysteresis

problem: information loss of the measuring method has to be compensated due to the definition of C und L :

$C(U;t)=dQ/dU \sim dP/dE$ $L(I;t)=dU/dI \sim dB/dH$

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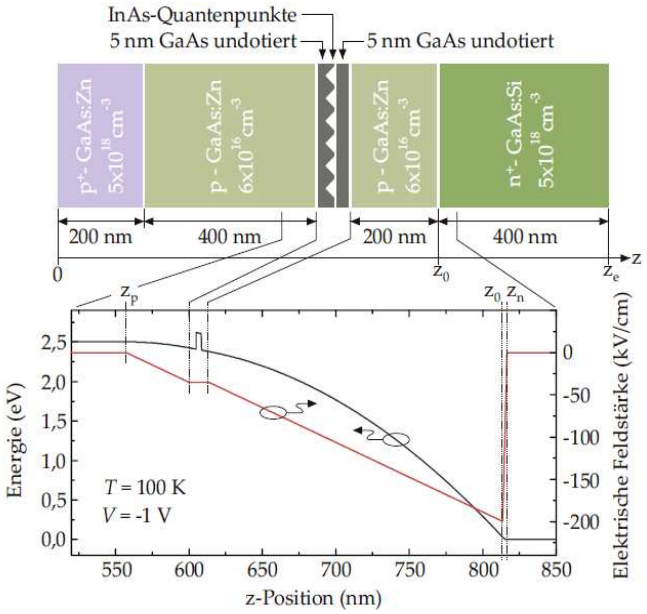
The TU5822 p-Speicher-FET

Question: can inverted hysteresis compensate internal losses ?

Setup



Data: (PhD Marent 2009)

time constant at charging the QD	< 100 nsec
decharging the QD at voltage	< -14V
typical load resistor	10 – 100 M Ohm
=> at overunity:	100 M Ohm
working frequencies	ca. 100kHz

Answer

It can work with overunity!

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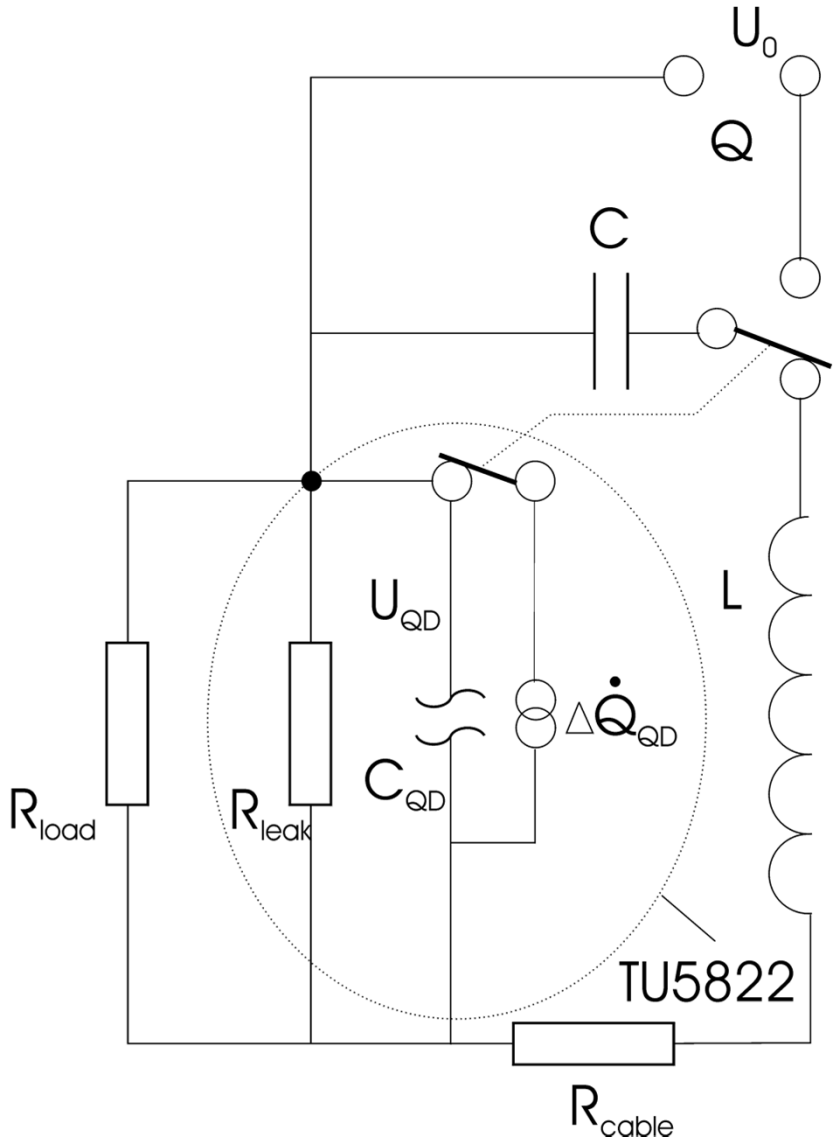
Idea and realization of a self-excited oscillator

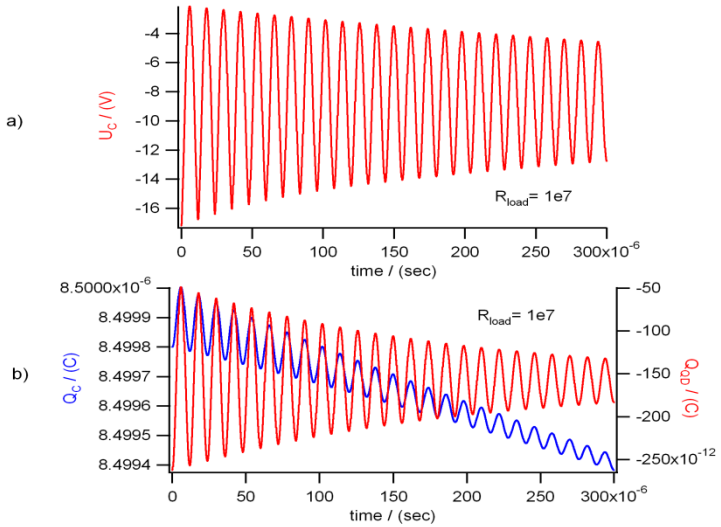
Oscillation circuit with
the capacity TU5822:



Simulation of a self-exciting oscillator with the TU5822

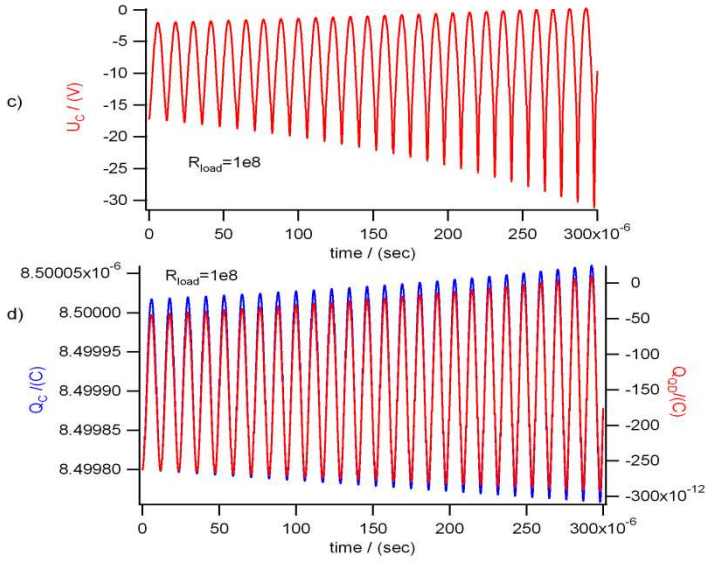
Result:

„relaxation“



R_load=10MOhm

„self-excitation“



R_load=100MOhm

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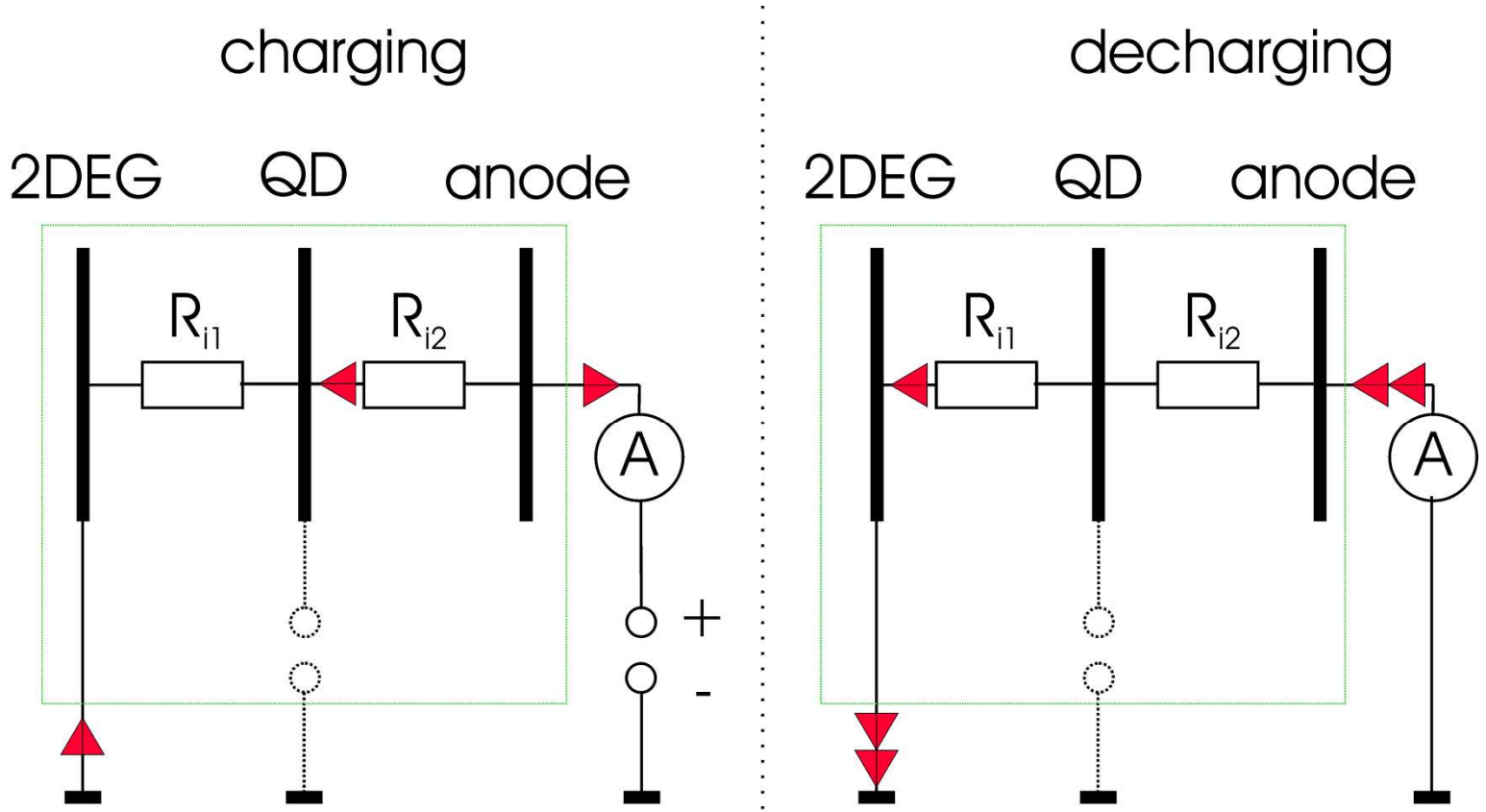
Interpretation of a overunity cycle

by the example of a N-storage FETs with quantum dots (QD)



(the QD‘s support the outer voltage source)

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Non-conservative cycle by nonlinear coupling

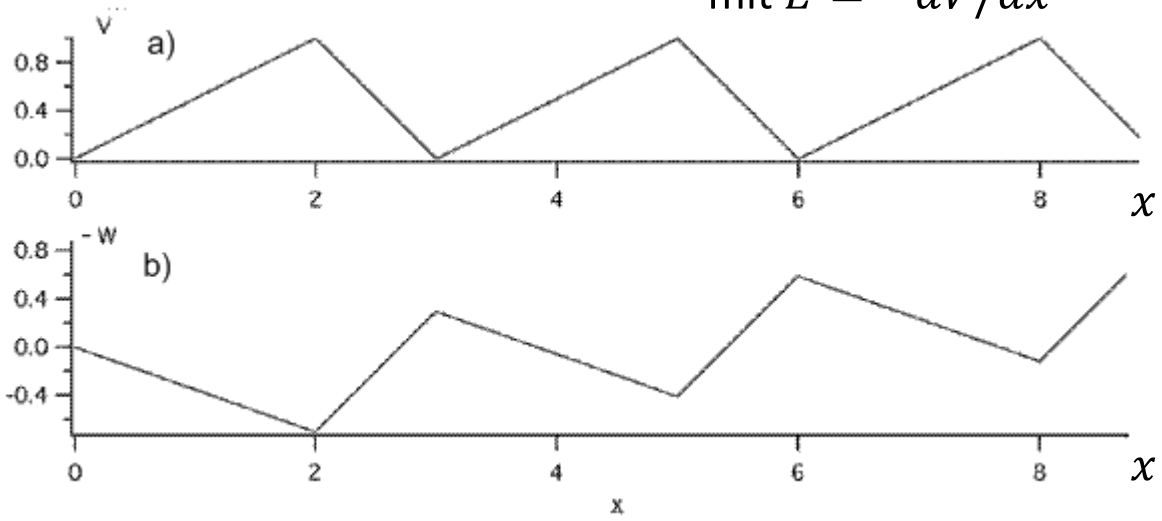
The mathematical principle:

coupling of a non-linear charge *q* to an asymetric potential

potential V

energy W

mit $E = -dV/dx$



$$where\ energy\ W = \int q.E(x)\,dx\ with\ charge\ q \sim \sqrt{\|E(x)\|}$$

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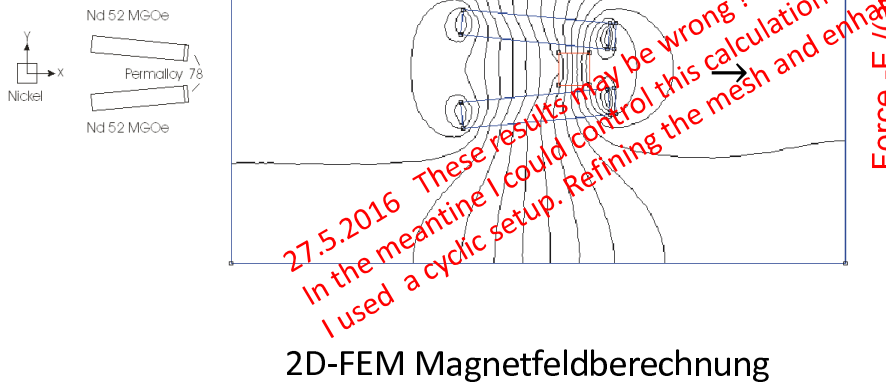
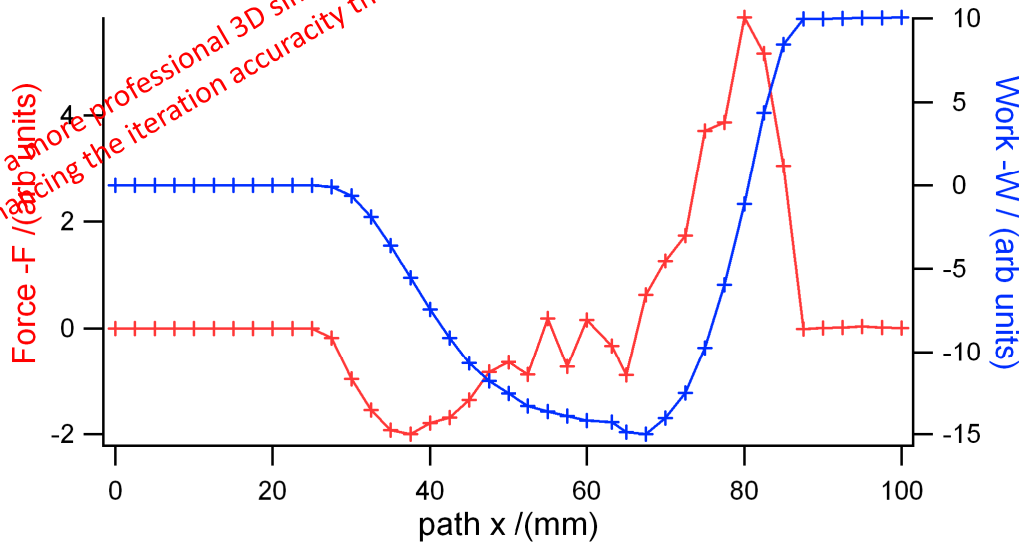
Non-conservative field by nonlinear coupling

The application to the permanent-magnet-motor



2D-FEM Magnetfeldberechnung



Process: quadratic Nickel block is moved in the permanent magnet field

Surprising news: energy balance per cycle is non-conservative !

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Non-conservative field by non-linear coupling

Theoretical result:

Violation of the (Poynting -) energy conservation of electrodynamics ?

No , because

1) Poynting energy conservation is an approximation It does not cover everything ! example: fast inductive changes (Magnetron, Nikulov)
2) Other electromagnetic energy definitions are possible
   i.e dE = F dx, where the force F is calculated by the electromagnetic stress tensor.
3) All possible contributions have to be balanced by non-equilibrium-thermodynamics !

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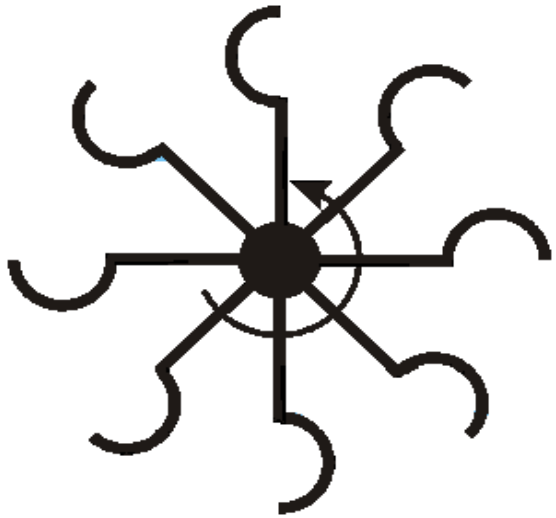
Thanks for your attention !

And here some publicity:



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