Bardzo krótka historia czasu

1971- 2011

„czterdzieści lat minęło jak jeden dzień”

21 maja 2011; Piotr Garbaczewski

The Nobel Prize in Physics **1971** was awarded to Dennis Gabor *"for his invention and development of the* ***holographic*** *method"*.

The Nobel Prize in Physics **1972** was awarded jointly to John Bardeen, Leon Neil Cooper and John Robert Schrieffer *"for their jointly developed theory of* ***superconductivity,*** *usually called the BCS-theory"*.

The Nobel Prize in Physics **1973** was divided, one half jointly to Leo Esaki and Ivar Giaever *"for their experimental discoveries regarding tunneling phenomena in semiconductors and superconductors, respectively"* and the other half to Brian David Josephson *"for his theoretical predictions of the properties of a supercurrent through a tunnel barrier, in particular those phenomena which are generally known as the* ***Josephson effects****"*.

The Nobel Prize in Physics **1974** was awarded jointly to Sir Martin Ryle and Antony Hewish *"for their pioneering research in radio astrophysics: Ryle for his observations and inventions, in particular of the aperture synthesis technique, and Hewish for his decisive role in the* ***discovery of pulsars****"*

The Nobel Prize in Physics **1975** was awarded jointly to Aage Niels Bohr, Ben Roy Mottelson and Leo James Rainwater *"for the discovery of the connection between collective motion and particle motion in atomic nuclei and the development of the* ***theory of the structure of the atomic nucleus*** *based on this connection"*.

The Nobel Prize in Physics **1976** was awarded jointly to Burton Richter and Samuel Chao Chung Ting *"for their pioneering work in the* ***discovery of a heavy elementary particle of a new kind"***

The Nobel Prize in Physics **1977** was awarded jointly to Philip Warren Anderson, Sir Nevill Francis Mott and John Hasbrouck van Vleck *"for their fundamental theoretical investigations of the **electronic structure of magnetic and disordered systems**"*.

The Nobel Prize in Physics **1978** was divided, one half awarded to Pyotr Leonidovich Kapitsa *"for his basic inventions and discoveries in the area of **low-temperature physics"***,the other half jointly to Arno Allan Penzias and Robert Woodrow Wilson *"for their discovery of **cosmic microwave background radiation"*.**

The Nobel Prize in Physics **1979** was awarded jointly to Sheldon Lee Glashow, Abdus Salam and Steven Weinberg *"for their contributions to the **theory of the unified weak and electromagnetic interaction** between elementary particles, including, inter alia, the prediction of the weak neutral current"*.

The Nobel Prize in Physics **1980** was awarded jointly to James Watson Cronin and Val Logsdon Fitch *"for the discovery of **violations of fundamental symmetry** principles in the decay of neutral K-mesons"*

The Nobel Prize in Physics **1981** was divided, one half jointly to Nicolaas Bloembergen and Arthur Leonard Schawlow *"for their contribution to the development of **laser spectroscopy**"* and the other half to Kai M. Siegbahn *"for his contribution to the development of **high-resolution electron spectroscopy**"*.

The Nobel Prize in Physics **1982** was awarded to Kenneth G. Wilson *"for his **theory for critical phenomena** in connection with phase transitions"*.

The Nobel Prize in Physics **1983** was divided equally between Subramanyan Chandrasekhar *"for his theoretical studies of the physical processes of importance to the* ***structure and evolution of the stars****"* and William Alfred Fowler *"for his theoretical and experimental studies of the nuclear reactions of importance in the* ***formation of the chemical elements in the universe"*****.**

The Nobel Prize in Physics **1984** was awarded jointly to Carlo Rubbia and Simon van der Meer *"for their decisive* ***contributions to the large project****, which led to the discovery of the field particles W and Z, communicators of weak interaction"*

The Nobel Prize in Physics **1985** was awarded to Klaus von Klitzing *"for the discovery of the* ***quantized Hall effect****"*.

The Nobel Prize in Physics **1986** was divided, one half awarded to Ernst Ruska *"for his fundamental work in electron optics, and for the design of the first* ***electron microscope****"*,the other half jointly to Gerd Binnig and Heinrich Rohrer *"for their design of the* ***scanning tunneling microscope****"*.

The Nobel Prize in Physics **1987** was awarded jointly to J. Georg Bednorz and K. Alexander Müller *"for their important break-through in the discovery of* ***superconductivity in ceramic materials****"*

The Nobel Prize in Physics **1988** was awarded jointly to Leon M. Lederman, Melvin Schwartz and Jack Steinberger *"for the neutrino beam method and the demonstration of the doublet structure of the leptons through the* ***discovery of the muon neutrino****"*.

The Nobel Prize in Physics **1989** was divided, one half awarded to Norman F. Ramsey *"for the invention of the separated oscillatory fields method and its use in the hydrogen maser and other* ***atomic clocks****"*,the other half jointly to Hans G. Dehmelt and Wolfgang Paul *"for the development of the* ***ion trap technique"*****.**

The Nobel Prize in Physics **1990** was awarded jointly to Jerome I. Friedman, Henry W. Kendall and Richard E. Taylor *"for their pioneering investigations concerning deep inelastic scattering of electrons on protons and bound neutrons, which have been of essential importance for the* ***development of the quark model in particle physics"*****.**

The Nobel Prize in Physics **1991** was awarded to Pierre-Gilles de Gennes *"for discovering that methods developed for studying order phenomena in simple systems can be generalized to more complex forms of matter, in particular to* ***liquid crystals*** *and polymers"*.

The Nobel Prize in Physics **1992** was awarded to Georges Charpak *"for his invention and development of* ***particle detectors****, in particular the multiwire proportional chamber"*.

The Nobel Prize in Physics **1993** was awarded jointly to Russell A. Hulse and Joseph H. Taylor Jr. *"for the discovery of a* ***new type of pulsar****, a discovery that has opened up new possibilities for the study of gravitation"*

The Nobel Prize in Physics **1994** was awarded *"for pioneering contributions to the development of* ***neutron scattering technique****s for studies of condensed matter"* jointly with one half to Bertram N. Brockhouse *"for the development of* ***neutron spectroscopy****"* and with one half to Clifford G. Shull *"for the development of the* ***neutron diffraction*** *technique"*.

The Nobel Prize in Physics **1995** was awarded *"for pioneering experimental contributions to lepton physics"* jointly with one half to Martin L. Perl *"for the discovery of the **tau lepton**"* and with one half to Frederick Reines *"for the **detection of the neutrino**"*.

The Nobel Prize in Physics **1996** was awarded jointly to David M. Lee, Douglas D. Osheroff and Robert C. Richardson *"for their discovery of **superfluidity in helium-3**"*.

The Nobel Prize in Physics **1997** was awarded jointly to Steven Chu, Claude Cohen-Tannoudji and William D. Phillips *"for development of **methods to cool and trap atoms with laser light**"*.

The Nobel Prize in Physics **1998** was awarded jointly to Robert B. Laughlin, Horst L. Störmer and Daniel C. Tsui *"for their discovery of a new form of **quantum fluid with fractionally charged excitations"***.

The Nobel Prize in Physics **1999** was awarded jointly to Gerardus 't Hooft and Martinus J.G. Veltman *"for elucidating the **quantum structure of electroweak interactions in physics**"*

The Nobel Prize in Physics **2000** was awarded *"for basic work on **information and communication technology**"* with one half jointly to Zhores I. Alferov and Herbert Kroemer *"for developing semiconductor heterostructures used in **high-speed- and opto-electronics"*** and the other half to Jack S. Kilby *"for his part in the invention of the integrated circuit"*.

The Nobel Prize in Physics **2001** was awarded jointly to Eric A. Cornell, Wolfgang Ketterle and Carl E. Wieman *"for the achievement of **Bose-Einstein condensation in dilute gases** of alkali atoms, and for early fundamental studies of the properties of the condensates"*.

The Nobel Prize in Physics **2002** was divided, one half jointly to Raymond Davis Jr. and Masatoshi Koshiba *"for pioneering contributions to astrophysics, in particular for the **detection of cosmic neutrinos**"* and the other half to Riccardo Giacconi *"for pioneering contributions to astrophysics, which have led to the **discovery of cosmic X-ray sources**"*.

The Nobel Prize in Physics **2003** was awarded jointly to Alexei A. Abrikosov, Vitaly L. Ginzburg and Anthony J. Leggett *"for pioneering contributions to the **theory of superconductors and superfluids**"*.

The Nobel Prize in Physics **2004** was awarded jointly to David J. Gross, H. David Politzer and Frank Wilczek *"for the discovery of **asymptotic freedom** in the theory of the strong interaction"*.

The Nobel Prize in Physics **2005** was divided, one half awarded to Roy J. Glauber *"for his contribution to the **quantum theory of optical coherence**"*,the other half jointly to John L. Hall and Theodor W. Hänsch *"for their contributions to the development of laser-based **precision spectroscopy,** including the optical frequency **comb technique**"*.

The Nobel Prize in Physics **2006** was awarded jointly to John C. Mather and George F. Smoot *"for their discovery of the blackbody form and **anisotropy of the cosmic microwave backgroun**d radiation"*

The Nobel Prize in Physics **2007** was awarded jointly to Albert Fert and Peter Grünberg *"for the discovery of **Giant Magnetoresistance**"*

The Nobel Prize in Physics **2008** was divided, one half awarded to Yoichiro Nambu *"for the discovery of the mechanism of **spontaneous broken symmetry** in subatomic physics"*,the other half jointly to Makoto Kobayashi and Toshihide Maskawa *"for the discovery of the origin of the **broken symmetry** which predicts the existence of **at least three families of quarks** in nature"*.

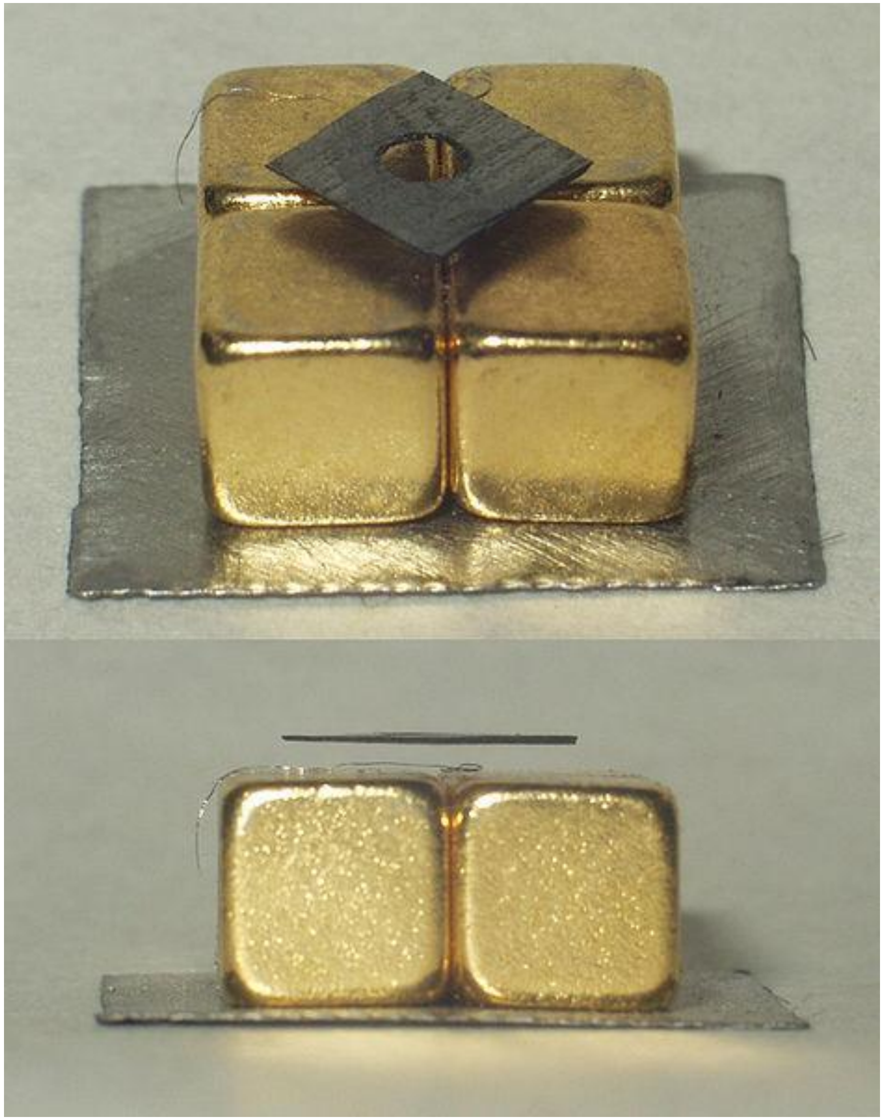
The Nobel Prize in Physics **2009** was divided, one half awarded to Charles Kuen Kao *"for groundbreaking achievements concerning the **transmission of light in fibers** for optical communication"*,the other half jointly to Willard S. Boyle and George E. Smith *"for the invention of an imaging semiconductor circuit **– the CCD sensor**"*.

The Nobel Prize in Physics **2010** was awarded jointly to Andre Geim and Konstantin Novoselov *"for groundbreaking experiments regarding the two-dimensional material* ***graphene"***

Have you ever wondered how to levitate a frog? In 2000, two scientists did just that and were awarded the Ig Noble prize for physics.
Andre Geim and Sir Michael Berry were awarded the **Ig Noble** prize for physics in 2000 for their 1997 paper **"Of Flying Frogs and Levitrons",** published in the European Journal of Physics.

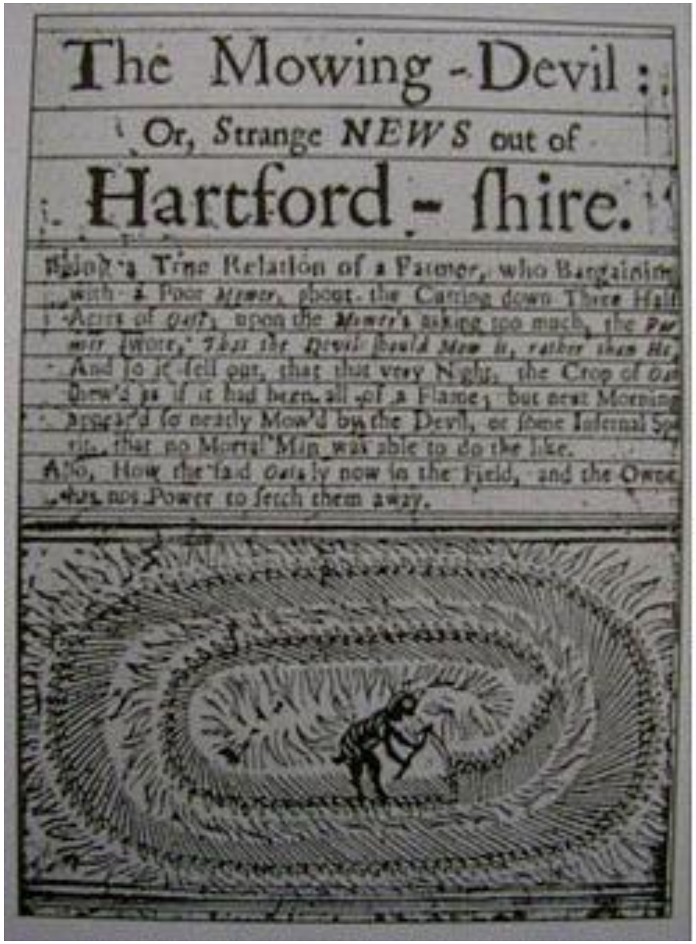
Geim and Berry explained the principle of **diamagnetic levitation.** A magnetic field can be induced in an object that is generally thought of as non-magnetic, a frog for example, by placing it over a strong electromagnet.
The research shows that all materials, and living organisms, possess molecular magnetism. The electrons within these materials react to the magnetic field by altering their orbits around an atom's nucleus in such a way as to oppose its influence. Molecular magnetism is millions of times weaker than ferromagnetism, so the field strengths need to be much greater in order to levitate non-magnetic objects.

Diamagnetic graphite levitation



IgNoble physics, 1991: Thomas Kyle, for his discovery of "the heaviest element in the universe, Administratium".

IgNoble Physics, 1992: David Chorley and Doug Bower, lions of low-energy physics, for their circular contributions to **field theory** based on the **geometrical destruction of English crops.**



The Mowing-Devil:

Or, Strange NEWS out of

Hartford-ſhire.

Being a True Relation of a Farmer, who Bargaining with a Poor Mower, about the Cutting down Three Half Acres of Oats, upon the Mower's asking too much, the Farmer Swore, That the Devil should Mow it, rather than He. And so it fell out, that that very Night, the Crop of Oats shew'd as if it had been all of a Flame; but next Morning appear'd so neatly Mow'd by the Devil, or some Infernal Spirit, that no Mortal Man was able to do the like.

Also, How the said Oats ly now in the Field, and the Owner has not Power to fetch them away.



IgNoble Physics, 1995: Presented to Dominique M.R. Georget, R. Parker, and Andrew C. Smith of Norwich, England, for their **rigorous analysis of soggy breakfast cereal**. It was published in the report entitled "A Study of the Effects of Water Content on the Compaction Behaviour of Breakfast Cereal Flakes."[

IgNoble Physics, 1996: Presented to Robert Matthews of Aston University, England, for his studies of Murphy's Law, and especially for demonstrating that **toast often falls on the buttered side.**[

(**Anything that can possibly go wrong, does**)

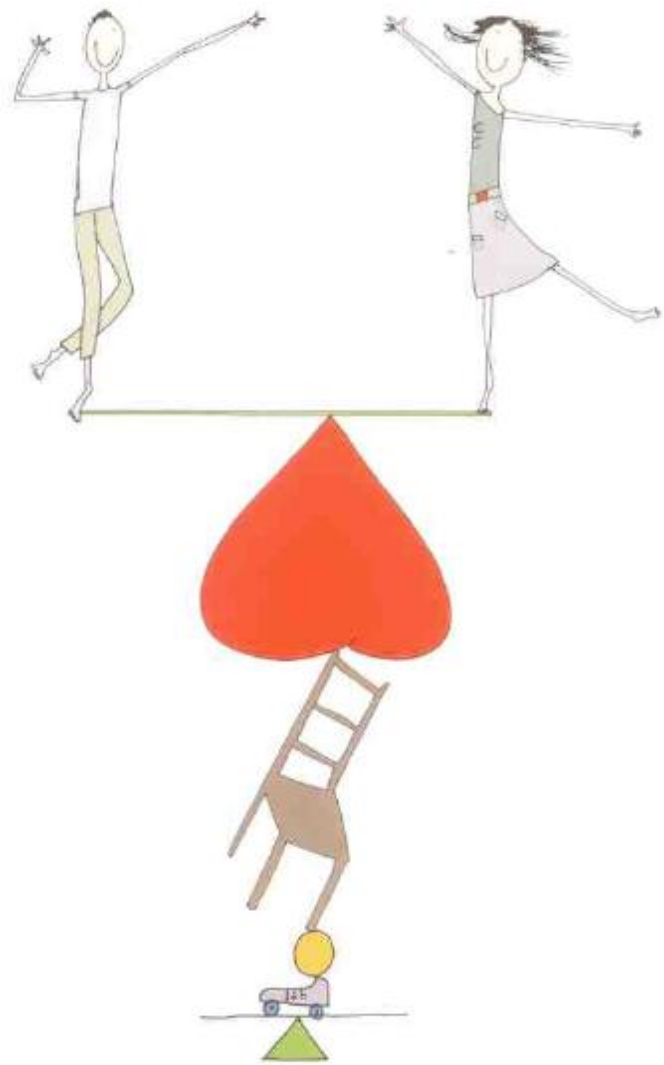
IgNoble Physics, m1997: Presented to John Bockris of Texas A&M University, for his achievements in cold fusion, in the **transmutation of base elements into gold,** and in the electrochemical incineration of domestic rubbish.

- Bockris experimented in **cold fusion** after the 1989 Pons and Fleischmann affair. Bockris' research group was one of the early few to report results that matched those of Pons and Fleischmann. A 3-professor panel of Texas A&M later found that none of the experiments were fraudulently conducted, saying that spiking was unlikely because scientists got different results when they tested the spiking theory by intentionally putting tritium in water.[7] John Bockris later published his side of the controversy and a defense of academic freedom in *Accountability in Research*.[8]
- In 1993, Bockris claimed to be experimenting with the s**transmutation of elements**, specifically of base metals **into gold**. The scientist received a fair amount of media attention for these extraordinary claims, and other professors felt Texas A&M's reputation was suffering from the connection to the discredited "science" of alchemy.
- In 1997, Bockris was awarded an Ig Nobel Prize in the field of Physics for his work in **cold fusion**.[10]
- Bockris has subsequently retired from his professorship at Texas A&M.

IgNoble Physics, 1998: Presented to Deepak Chopra of The Chopra Center for Well Being, La Jolla, California, for his unique interpretation of **quantum physics as it applies to life, liberty, and the pursuit of economic happines**s.

$\hbar$ **?**

„Pursuit for happiness" niekwantowo - życie codzienne w języku fizyki klasycznej, jako problem (nie)stabilności układu dynamicznego

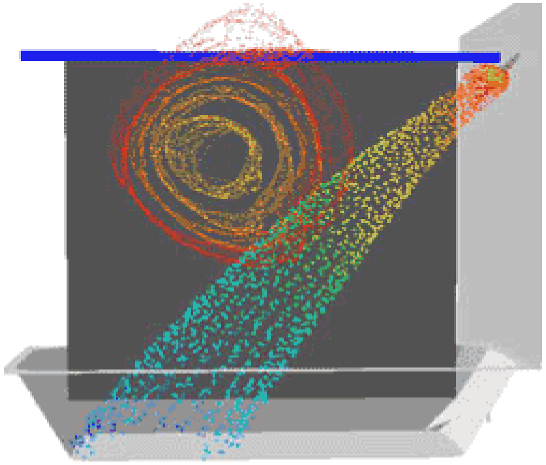


IgNoble Physics, 1999: Presented to Dr. Len Fisher of Bath, England and Sydney, Australia for calculating the optimal way to dunk a biscuit.[42] Also, to Professor Jean-Marc Vanden-Broeck of the University of East Anglia, England, and Belgium, for calculating **how to make a teapot spout that does not drip**.

IgNoble Physics, 2001: Presented to David Schmidt of the University of Massachusetts, for his partial explanation of the shower-curtain effect: a shower curtain tends to billow inwards while a shower is being taken

In physics, the **shower-curtain effect** is the phenomenon in which a shower curtain gets blown inward with a running shower. The problem of the cause of this effect has been featured in Scientific American magazine, with several theories given to explain the phenomenon but no definite conclusion.

Why does the shower curtain move toward the water?



SHOWER SIMULATION shows how a vortex forms, creating a pressure drop and sucking the curtain toward the water.

IgNoble Physics, 2003: Presented to Arnd Leike of the Ludwig Maximilian University of Munich, for demonstrating that **beer froth obeys the mathematical law of exponential decay.**

IgNoble Physics, 2004: Presented jointly to Ramesh Balasubramaniam of the University of Ottawa, and Michael Turvey of the University of Connecticut and Haskins Laboratory, for exploring and explaining the **dynamics of hula-hooping**.

- **IgNoble Physics, 2006:** Presented jointly to John Mainstone and Thomas Parnell of the University of Queensland, Australia, for patiently conducting the so-called pitch drop experiment that began in the year 1927 — in which a glob of congealed black tar pitch has been slowly dripping through a funnel, at a rate of approximately one drop every nine years.

The University of Queensland pitch drop experiment, featuring its current custodian, Professor John Mainstone (taken in 1990, two years into the eighth drop).

Date	Event	Duration (Months)	Duration (Years)
1927	Experiment set up		
1930	The stem was cut		
December 1938	1st drop fell	96-107	8.0-8.9
February 1947	2nd drop fell	99	8.3
April 1954	3rd drop fell	86	7.2
May 1962	4th drop fell	97	8.1
August 1970	5th drop fell	99	8.3
April 1979	6th drop fell	104	8.7
July 1988	7th drop fell	111	9.3
28 November 2000	8th drop fell	148	12.3

IgNoble Physics, 2007: L. Mahadevan and Enrique Cerda Villablanca for their theoretical study of **how sheets become wrinkled**

Cerda, E.; Mahadevan, L. (1998). "Conical Surfaces and Crescent Singularities in Crumpled Sheets". *Physical Review letters* **80** (11): 2358.

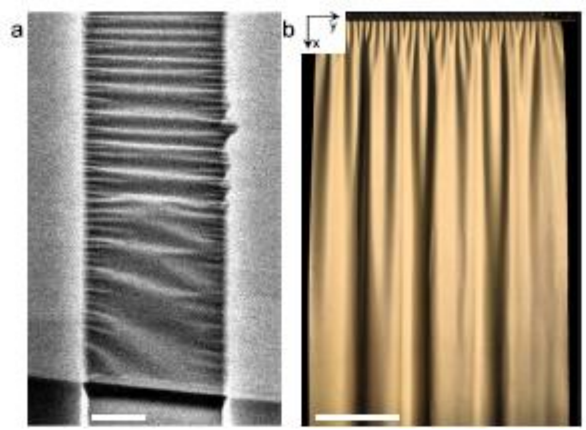


FIG. 1 (color online). (a) Scanning electron microscopy image of suspended graphene bilayer (scale bar is 1 μm). (b) Pattern of folds obtained for a rubber curtain (scale bar is 25 cm).

PRL 106, 224301 (2011)

Wrinkling Hierarchy in Constrained Thin Sheets from Suspended Graphene to Curtains

IgNoble Physics, 2008: Dorian Raymer and Douglas Smith, for proving that heaps of string or **hair will inevitably tangle.**

Raymer, Dorian M.; Smith, Douglas E. (16 October 2007). "Spontaneous knotting of an agitated string". *PNAS* (National Academy of Sciences) **104** (42): pp. 16432–7.

IgNoble Physics, 2009: Katherine K. Whitcome of the University of Cincinnati, Daniel E Lieberman of Harvard University, and Liza J. Shapiro of the University of Texas, all in the US, for analytically determining why pregnant women **do not tip over**

Whitcome, Katherine K.; Shapiro, Liza J.; Lieberman, Daniel E. (2007). "Fetal load and the evolution of lumbar lordosis in bipedal hominins". *Nature* **450** (7172): 1075–1078.

tip over - turn from an upright or normal position; "The big vase overturned"; "The canoe tumped over"overturn, tump over, turn over
capsize, turn turtle, turtle - overturn accidentally; "Don't rock the boat or it will capsize!"
turn - change orientation or direction, also in the abstract sense; "Turn towards me"; "The mugger turned and fled before I could see his face"; "She turned from herself and learned to listen to others' needs"
upend - become turned or set on end; "the airplanes upended"
tip over, tump over, bowl over, knock over, overturn, turn over, upset - cause to overturn from an upright or normal position; "The cat knocked over the flower vase"; "the clumsy customer turned over the vase"; "he tumped over his beer"

IgNoble Physics, 2010: Lianne Parkin, Sheila Williams, and Patricia Priest of the University of Otago, for demonstrating that, on icy footpaths in wintertime, people slip and fall less often **if they wear socks on the outside of their shoes.**

N Z Med J. 2009 Jul 3;122(1298):31-8.

Preventing winter falls: a randomised controlled trial of a novel intervention.

Parkin L, Williams SM, Priest P.

Abstract

AIM:

To investigate the hypothesis that wearing socks over shoes improves traction on icy footpaths.

METHODS:

Randomised controlled trial involving 30 pedestrians (median age 21 years, range 18-70) travelling in a downhill direction on icy public footpaths at two sites in Dunedin, New Zealand. Intervention: different coloured socks applied over normal footwear or usual practice (unadulterated footwear). Primary outcome: difference in mean self-reported slipperiness on a 5-point scale. Secondary outcomes: falls, observer-rated slipperiness, observer-rated confidence, time to descend study slope.

CONCLUSION:

Wearing socks over shoes appears to be an effective and inexpensive method to reduce the likelihood of slipping on icy footpaths.

Auto-skarpeta, tekstylne łańcuchy śniegowe – hit 2010

www.autosock.com.pl

Aneks: Pożytki z grzańca w fizyce

Supercond. Sci. Technol. 24 (2011) 055008 (4pp)

Alcoholic beverages induce superconductivity in $FeTe_{1-x}S_x$

K Deguchi[1,2,3], Y Mizuguchi[2,3], Y Kawasaki[1,2,3], T Ozaki[1,3], S Tsuda[1,3], T Yamaguchi[1,3] and Y Takano[1,2,3]

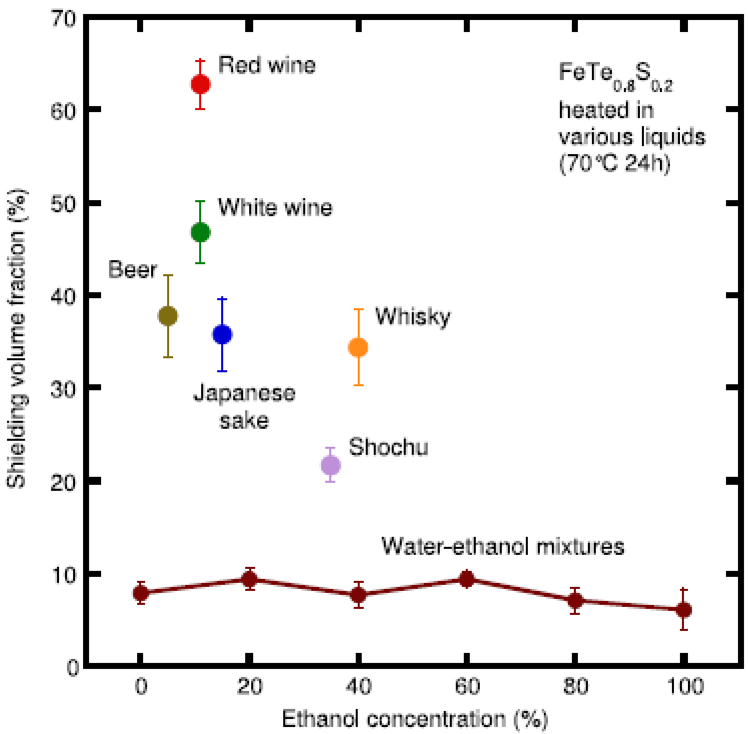


Figure 2. The shielding volume fraction of $FeTe_{0.8}S_{0.2}$ samples heated in various liquids as a function of ethanol concentration.

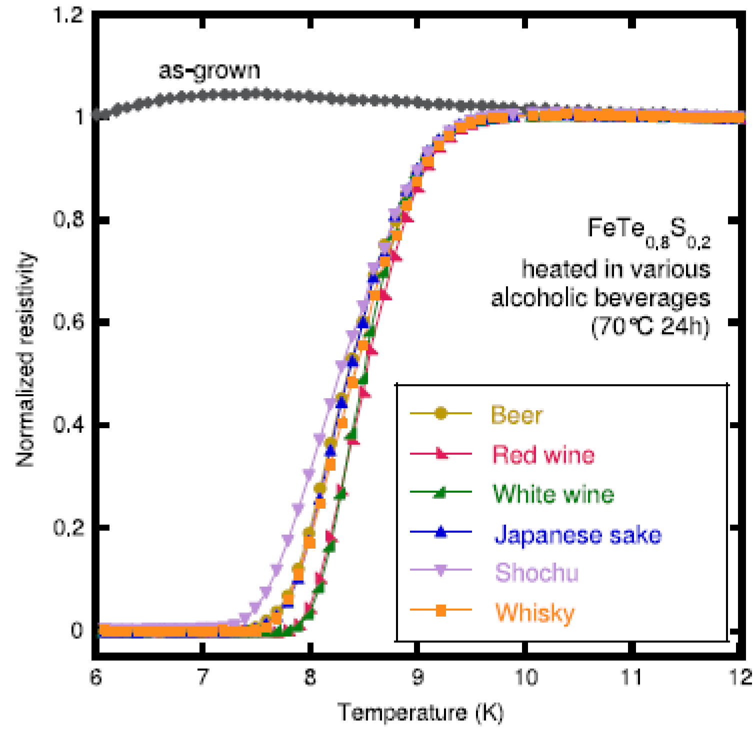


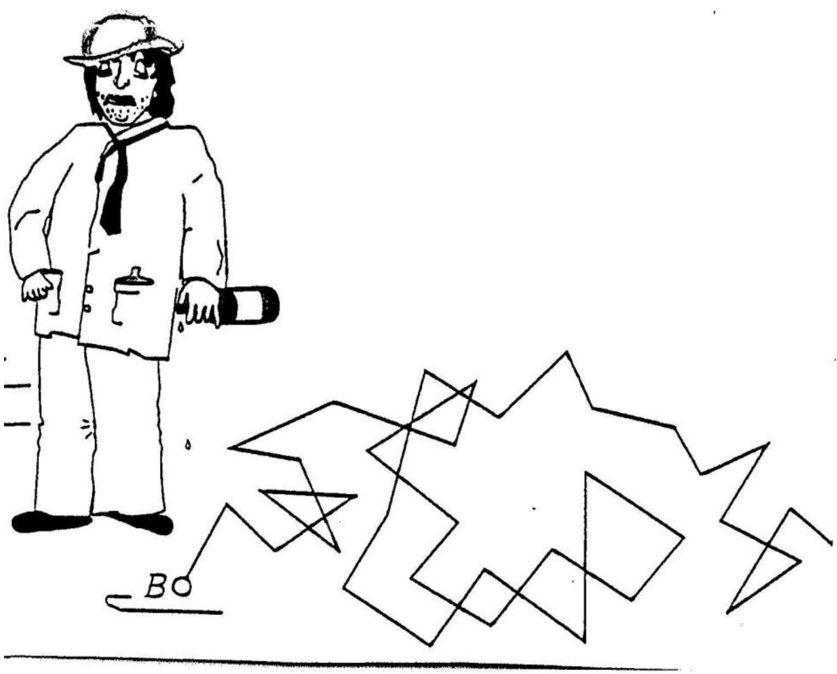
Figure 3. Temperature dependence of normalized resistivity below 12 K for the as-grown sample and the samples heated in various alcoholic beverages.

Shōchū should not be confused with sake, a brewed rice wine. Its taste is usually far less fruity and depends strongly on the nature of the starch used in the distilling process. Its flavor is often described as "nutty" or "earthy".

Shōchū is drunk in many ways according to season or personal taste:neat, i.e., on its own with nothing added, on the rocks, i.e., mixed with ice, diluted with room temperature or hot water, mixed with oolong tea or fruit juice, as chūhai - a mixed drink consisting of shōchū, soda, ice and some flavoring, often lemon, grapefruit, apple or ume, mixed with a low-alcohol beer-flavored beverage known as hoppy;

In conclusion, we found that hot commercial alcoholic beverages were effective in inducing superconductivity in $FeTe_{0.8}S_{0.2}$ compared to pure water, ethanol and water–ethanol mixtures. The largest shielding volume fraction and the highest T_c^{zero} were achieved by heating the $FeTe_{0.8}S_{0.2}$ sample in red wine. A detailed investigation to clarify the key factor in inducing superconductivity by hot alcoholic beverages is anticipated.

Brak doniesień o nadprzewodzących żabach (nie przeżywają 24 godzin w grzańcu ?)

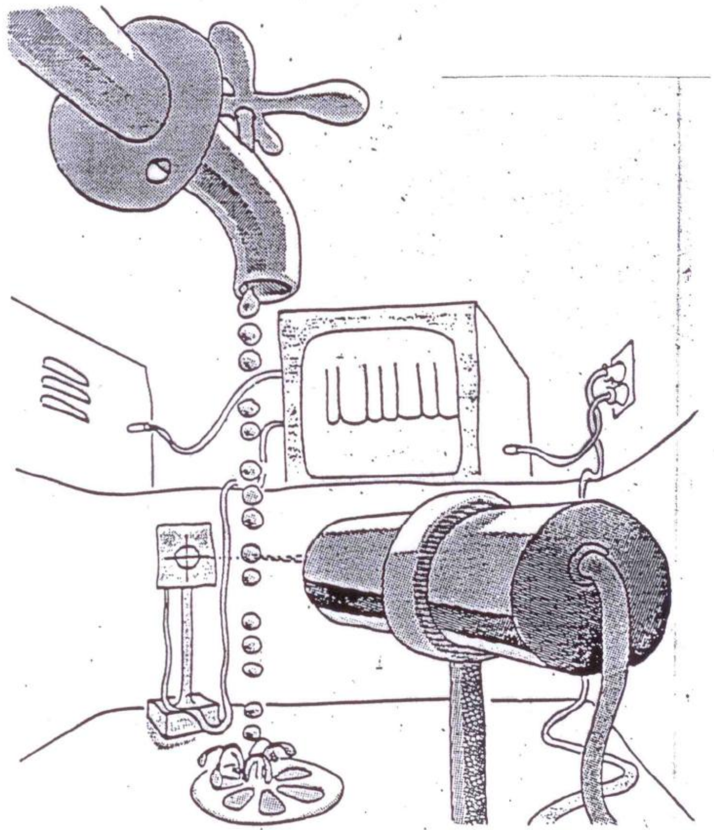


Przykładowa użyteczność stanu upojenia alkoholowego w fizyce

Pytania sprawdzające

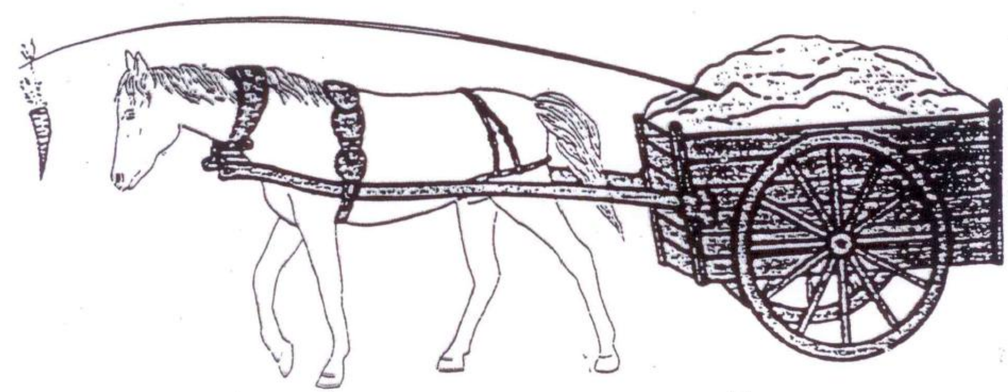
Goni ć króliczka, czy złapać go ?

Is it really worth running in the rain?



Co powiemy o cieknącym kranie ?

A co o trajektorii dwukółki ?



Sorry, no comments !!!