search produced by:

Giancarlo Gazzoni
Born in Italy, Ravenna
19/03/1954

address
Via Castiglione 50
48015 Cervia (RA)
Italy
PO Box No. 24
tel 00 39 340 2847 014

research on nuclear decays in general, with an explanation of empirical phenomena of "cold fusion and" cold fission "
and cold nuclear transmutation.

At the base of the research is the assumption that the decay of the excited atoms can be driven by fields assionici, (hypothesis taken from theories of Mr. Frank Wilczek) with exchange of "axions" between electrons and between nuclei at speeds exceeding r luminal
and with axions (particles gremlins), bosonic particles particular, with speed> 10 ^ +62 c that in special cases of disturbance decay in a very short time in photons. (about 10 ^ -28 seconds) with speed c (light velocity). Personally I prefer the term particles gremlins.
Particular fields, with exchanges between groups of particles, have been hypothesized many times, by many theorists, to explain the anomaly of condensed matter, and the formation of crystals and all the various "condensation" of matter, sub-micron level, where the normal electrostatic forces of Van der Wals not have sufficient strength to "" "bonding of crystals.
The contraindication for this theory, is that they never measured these particles, which
They are usually represented by photons. Or the like.
I believe that have never been measured, because the particles are exchanged speed
Huge, superluminal, almost instantaneous, more than 10 ^ +62 c
Fields assionici are fundamental in the phenomena of so-called cold fusion and cold transmutations.
the nuclei depending on the speed of execution or excitement,
may produce different decay modes . And explain why we may have different decay modes, such as
decay times of the order of 10 ^ -10 seconds.,
produce many photons broad spectrum for the dropout quote of the core.
times of the order of 10 ^ -23 seconds, producing a single photon range, or in the case of beta decays neutrinos and electrons.
We can produce a new understanding of the phenomena
of decay electro-weak and strong force, which are present in the nucleus,
derived from the findings of high-energy physics, and from the observations and experimental data not standard, called cold fusion, or
from nuclear disasters from cosmological observations, results from
experimental variations of strange decay rates.

This article is the first part of an analysis of weak decays. and mergers, in nuclei with atomic number not exceeding 3 followed by another article, with the analysis of alpha decays, and the analysis of the different decays, on the basis of the density of the nuclei. And with atomic number greater than 3.

First part-introduction and explanation of electron capture energy in nuclei, and possible mergers

1 --- Abstract

Empirical semi-classical decay beta decays to electron capture, and phenomena of "cold fusion"

This article discusses a statistic empirical decays β + β -.,. derived from macroscopic observables. In this way, we can find and "isolate" sensitive variables which determine the frequency of decay of nuclei. and we can begin to understand how to intervene "to artificially change the natural rates of decay, and find ways to decay, fission and fuse nuclei in energy conditions" cold "
We can identify the underlying mechanism that allows type of decays,

and to understand why the phenomena of decay, for $\beta^{\pm}$ for electron capture and decay α are driven by the same basic principles

we can understand the mysterious mechanisms of the so-called Cold Fusion., and explains how to re nuclear fusions occur in environments with very low density energy.
We can understand how the nuclei, using energy "environmental concentration is not high, can have behaviors that seem to be possible only for large energies,
The statistics electro - weak are based on the assumption that every phenomenological decay electroweak, must be mediated by Higgs bosons decaying into Z ° and W ∓ , And produce a phase strange,
The quarks change flavor, in the interaction of Z ° bosons created by the excitement of the local vacuum, and that modify the stangeness of quarks, which decay into down and up with the issue of W bosons ∓ and modification of electrical charge.

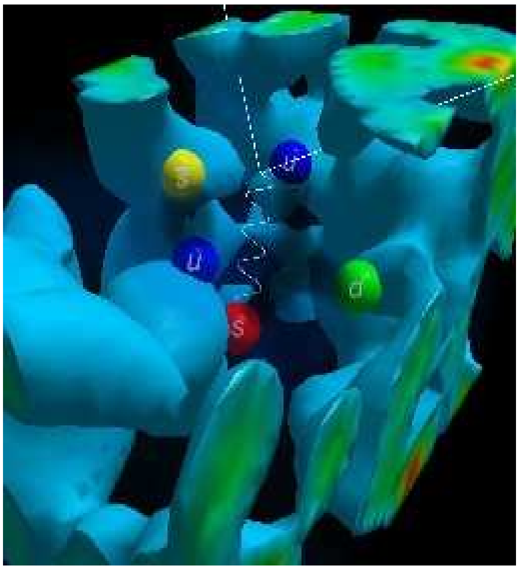

Fig.1-pictorial image of the interior of a proton. with phase "strangeness

2 ---- Introduction

At the base of the decays, we assume a physical mechanism of illumination and detection of areas with a defined radius of about 10-18mt. (About 1 Tev of wave amplitude)
The hypothesis that provides illuminating a space with smaller radius 10-18mt, the probability of production of bosons virtual Z ° becomes very high, and bosons products can interact with the quark, and then return the debt energetic vacuum with an annihilation process very special.
On their way, the Z ° bosons interact with the quarks of the nuclei, and it tastes change, a process that ends with the issuance of W bosons ∓ and change in electric charge of the quarks.

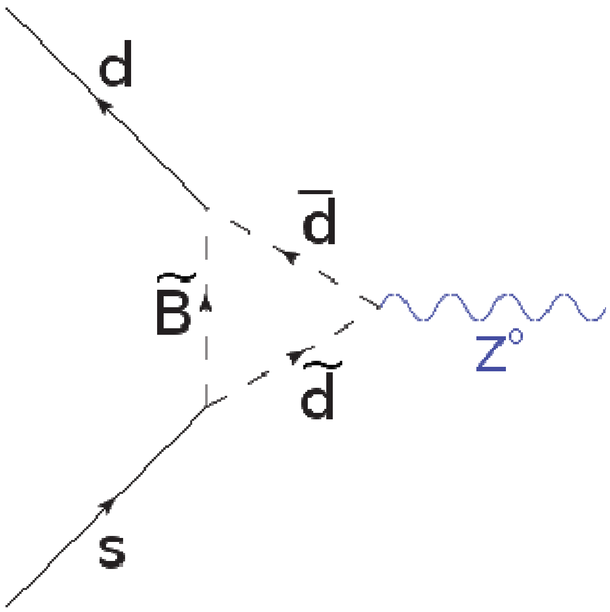

Fig.2 Diagram-boson Z °-quark interaction and change of taste

The production Z °, begins with the lighting or the determination of
space between electrons and quark up of the core., or the same process can occur with sudden jumps in density and internal temperature of the mixture of quark core for imbalances of bond energies.
Under typical energy of electron capture, an electron in a state of oscillation energy with vacuum.
Tau can reach the state and exist in the interior of the nucleus. .
The electrons reach the state Tau as do the neutrinos, and Tau are in the state for about 10 ^ -28 seconds.
In these times, they can not interact with the quarks, and the oscillation ends without producing any phenomena.
In the state Tau electrons can have functions of antenna and exchange photons / virtual axions with internal and external electromagnetic fields produced by the quark core or special conditions of electrons "protruding.
The electron in a state Tau inside the nucleus with increased energy state by the simultaneous reception of photons / axions (so basically a single photon), brings the core was stran ge, for times less than 10-27 sec, maybe we are on 10 ^ -23 seconds, and beta decays into normally. Hardly the nucleus in this state will be able to interact with other nuclei.
This process leads to the decay of nuclei themselves for electron capture when a condition exists with natural imbalances in the composition of the bonds internal energy of the nucleus with relatively rich unstable nuclei of protons than neutrons.
In the case of beta decay the same normal quarks, photons produce the necessary

for the state strange, with jumps in density between them, for the illumination of spaces required for the formation of bosons Z °.
In the case of cold fusion, the nuclei have been strange times in the order of 10-10 seconds, because the electron Tau was unable to receive photons assionici from about one billion electron present in the environment in the form of a vortex.

We can produce electronic captures artificial, with chains of electrons in the vortex artificially brought in the right energy conditions, with energy input from external electric fields, which induces spin chains of millions of electrons to interact with the electromagnetic fields of the interior of the nucleus quark., with the production of Higgs bosons which decay to Z ° decaying into W ∓
Electrons in the vortex around the cores, can produce an exchange of photons super - luminal with the quark of the core, or with an electron in state Tau within the nucleus.
We can describe the behavior of vortices euristic, without resorting to very complex calculations. We can infer, from the experimental data, the construction of vortices of electrons, with diameter approximately around 10 ^ - 6). 10 ^-10m, in number of at least one billion, with very low speed, around a few hundred nuclei of hydrogen or deuterium,
and the energy required to maintain the vortex can be taken from electromagnetic fields is not particularly intense, present in the environment.
Personally, I believe that the photons emitted by the electrons to stay in a circle,
can become a kind of bosons assionici with superluminal velocity, and be absorbed in times around 10 ^ -28 seconds by electrons in state or Tau normal swing with the vacuum, and inside the nuclei, for example, <we can approximate the energy released per electron to 1MeV, sing and produce a photon or 1 Gev (with a billion electrons),
which allows the Tau to remain in this state for u n time ranging from 10 ^ -16 seconds, 10 ^ -10 seconds and produce a prevalence of strange quark sea of quarks inside the nucleus.
The transfer speed of the photons is virtually instantaneous, (approximately <10 ^ -28 seconds), and then
s i can build the photon with the energy necessary for the normal production of quark-annihilation the sea in the nucleus, the state of the strange quark prevail.
The phenomenon is quite similar to that c h was measured in the transfer of photons
In the process photo - synthetic between antennas 1 external and 2 internal antennas ..
Possibly, also the phenomenon could occur at Mossbauer superluminal speed,
with the involvement of many nuclei in crystals, with a radius of about one micron,
in line with the observation of energy transfer-heat mode not Planck ,
superluminal speed in crystals with a radius of about 1 m cron.

This would be a good experimental evidence in favor of the hypothesis.
the trade or particles assioniche or gremlins the ns, which in practice are photons at super-luminal and which decay into photons normal at light speed in normal conditions of interference ..

A similar mechanism occurs in the decay β , In unstable nuclei neutron-rich compared to the proton or vice versa, in this case the space of at least 10-18mt is identified by vibrations of the quark of nucleons the core components with production Z °, and consequent decay.

All these cases have in common the identification of an area of less than
10-18mt, (wave amplitude of a Tev) and the formation of virtual bosons Z ° from the vacuum.
We can think of the lighting of a space of 10-18mt, such as the formation of rings "heavy light" surrounding the nuclei, composed of light heavy virtual Z ° bosons with energy of about 90Gev.

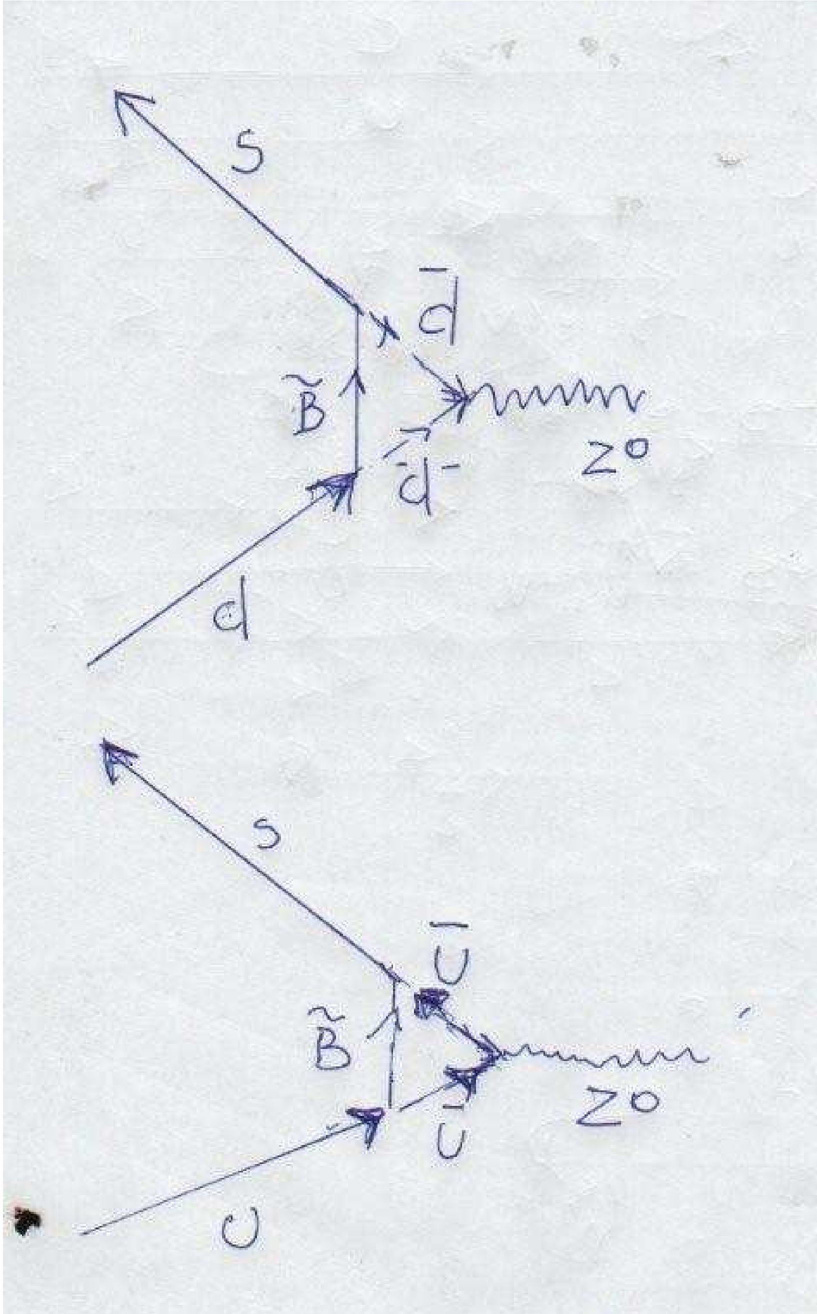

Fig 3. - diagram with vertex function of changes in the flavor of quark interaction with the Z ° bosons

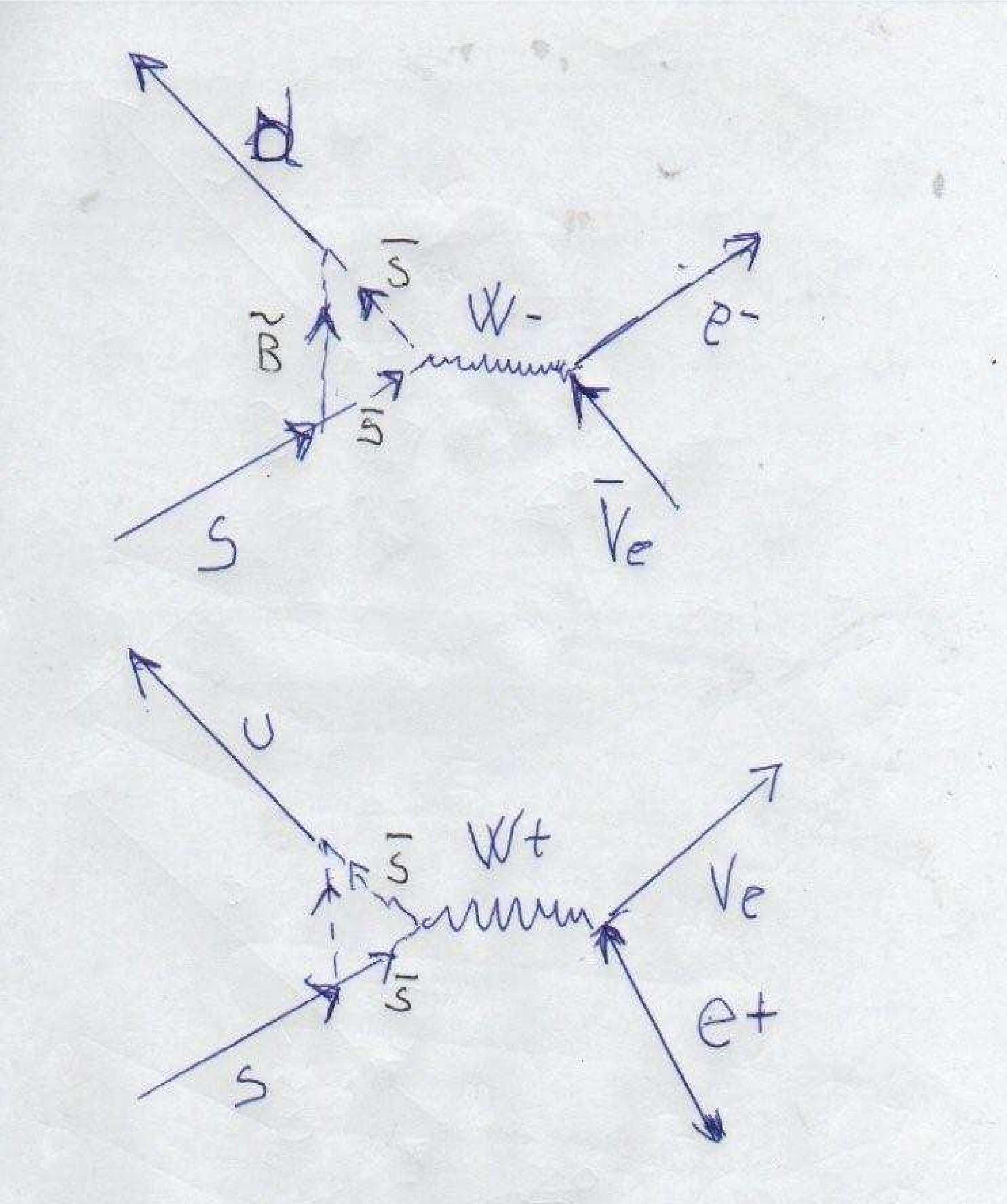

Figure 4 - decay phase strange quark by emission with W + boson

The mechanisms of the decays allow to identify the behaviors that are the basis of mergers weak induced transmutations with "surprising" associated with low energy nuclear effects and amazing and surprising effects of elimination of gamma radiation with effects, which allow the emission of photons in cascades of times of 10 ^ -10 seconds to release the excess energies, while we would normally outputting a single range of relaxation energy. or the emission of electrons and anti-neutrino or positron and neutrino, to comply with the decay times of 10-23 seconds of the change of state for strange normal beta decay or even the time for fusion of nuclei.
Similar mechanisms delete the gamma photons and pions, and neutrinos in the decay of strange quarks.

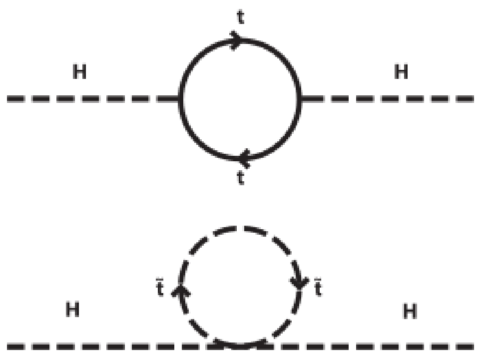

Fig.5-diagram cancellation mechanism in the vacuum of the Higgs boson

With this data, we can infer a golden rule of probabilistic behavior of the decays

-A quark decays with a strange phase in down if it was in the up state, and vice versa. -

For example-
In a single proton, if the strange phase, concerns an up quark, we have a phase lambda or sigma
The proton decays into a neutron.
If the phase relation at the same time a strange up quarks and a down quark,
we have a phase Xi, and proton decays into a proton.
If the phase strange regards all three qu a rk, we have a phase omega- and proton decays into a neutron.

If we, for example, a cold fusion reaction between

Fe56 + proton-phase lambda /sima ----- > Fe57
Fe56 + xi-phase proton ------ > Co57
Fe 56 + omega phase proton ------ > Fe57

We find empirical equations for the probability of nuclear processes with strange changes in the nuclei.
Are not addressed in this article to simplify, we meet in a general explanation with statistical euros.
For a very accurate calculation of these phenomena with quantum mathematics Standard, we should have for a single electron, 19 free parameters, plus 9 parameters for the 'oscillation in vacuum, plus 7 parameters for the interaction with the Higgs bosons, plus 100 parameters for
the self-gravitational interactions with the Higgs fields. (SUSY)
The calculation is so complex as to be intractable in practice.
We must follow the empirical indications of laboratory experiments.
The principle is based on the need of the electron to oscillate with the vacuum, and pass in three basic states energy from electronic state in muon and tau.
Of course, it will pass most of the time in the state fundamental energetic,
but for about 10 ^ -28 seconds, will be in the state tau.
In this case, you will find within the nucleus with which it is linked,
and the core itself will go into strange.
If the time is within 10 ^ -28 seconds, we will have no measurable change,
and the core will remain in the ground state.

but if the electron in state Tau receives additional energy, for exchange superluminal photon-axions with quark excited, may lengthen the life time of about 10-23 seconds and produce a beta decay.
The electron in a state Tau could receive energy from the outside,
always-axions with photons, and concentrate and produce excitation
strange core with times of about 10 ^ -10 seconds.
In this case, the excited nucleus may travel a micron, and interact with another core, and merge., In this case with times of excitation of 10 ^ -10 seconds,
the core will release photons, about 10 ^ +12 photons, in pairs to eliminate the excess energy.

The change factor strange has an exponential increase and / or decrease exponentially directly proportional to variations also relatively very "small" in the times of detection of the distance of 10-16cm ^. within the nuclei

The factor is treated in equations probabilistic behavior in cm / sec, that is not strictly a speed, but covers a distance found in a second., And takes account of the strange prop r IETA of Z ° to dramatically increase the probability of interaction, when you arrive at energies of illumination of more than 1 Tv, where Z ° bosons self spread until they find target exponentially increasing the chances of capture and the cross section
In the case of electron capture probabilities of events are enormously sensitive to small changes in the order of fractions of 10 ^-16cm away from the “illuminazione” and even slightly decreasing or increasing the distance illuminated by 10 ^-16cm., You increase enormously the possibility of electron capture.

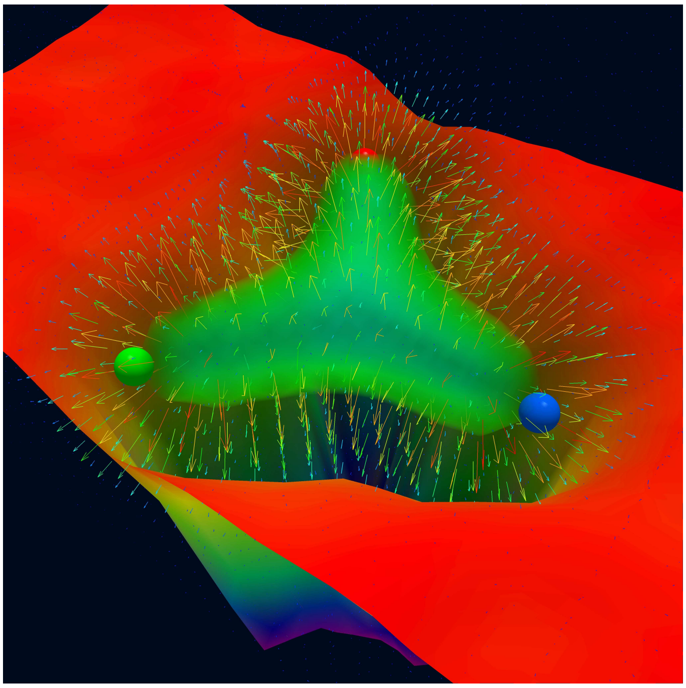

Fig.6 - . Pictorial image of the nucleus and force fields

3 - Electron capture in individual nuclei with atomic number> 3

The electron capture occurs normally in unstable nuclei, with a relatively high number of protons to neutrons and we can assume that one of the electrons that orbit the nucleus normally, go in and swap Tau was axion-photon gremlins
With the quarks of the nucleus, binding energy absorbing excess, and bring up quarks in a strange state. c on final change from up to down and normal beta decay.
.
This possibility could also be induced "artificially outside of nuclei naturally stable.
In the case of stable nuclei, an electron in state Tau, may exchange energy in excess from the outside of the core, and 10-1 define distances of 6 cm with the quark of protons forming the nucleus
This. Away or "lighting space always produces virtual Z ° bosons

In stable nuclei, the production of strange been disturbed, does not usually produce changes
unless have interazione with other nuclei., possibility that we discuss later

The production of Z bosons °, produces the phase strangeness, and decays with the emission

W ∓, according to the types of decay

All of the diagrams that follow non-classical are not to scale, propose the general scheme of the reactions.,

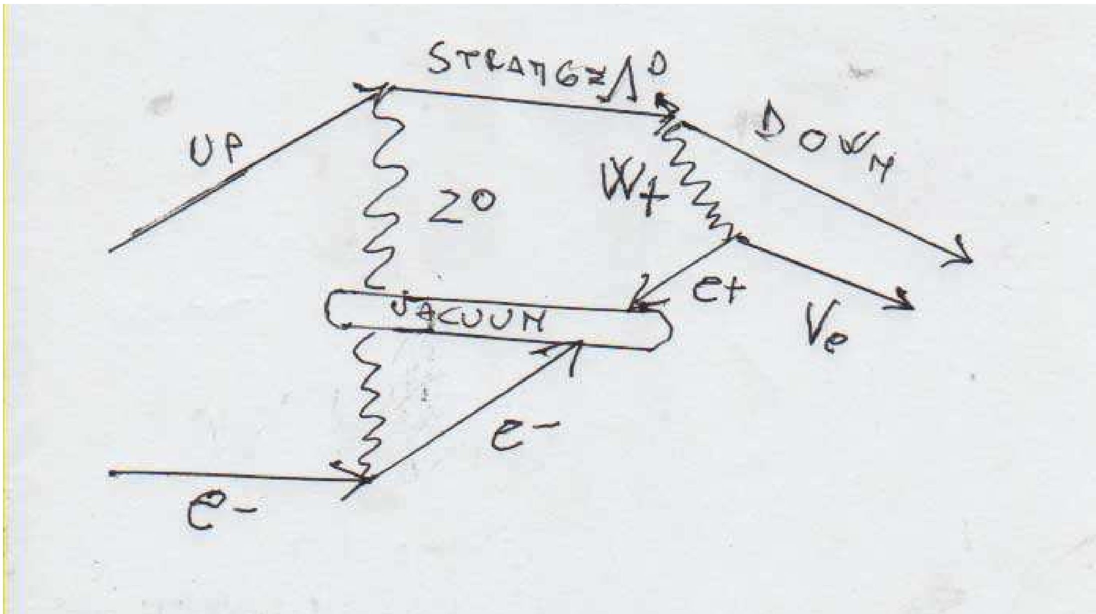

Fig 7-Diagram (not to scale) with electron capture decay phase sigma

In electron capture an up quark, in interaction with a boson Z °, it becomes strange and the issuance of a W + decays into down.
The interesting thing is that after the decay of W + in positron and neutrino, the positron annihilates with an electron product manager illumination original
and we have no emission of two photons are absorbed by debt because of energy produced in a vacuum.

4-H and phenomena in single proton in the nucleus with atomic number <4

an interesting physical phenomenon with nuclei of H and D,, composed of a single proton, or a proton and a neutron, takes place in special conditions "artificial".
We can imagine nuclei surrounded by vortices of electrons, millions of electrons gathered in spin chains ..
We have, consequently, strong electromagnetic fields produced by the vortices of electrons, which gain energy by absorbing photons generated by electromagnetic fields in the environment ..
The chains of electrons interact strongly with the electric charges of the quarks, and force them to absorb energy, with a huge amount of photons exchanged.
The quark, in the process of absorption energy, are forced to "restrict" the wave amplitude, and the size of the nucleus.
In addition, the electrons normally bound to the nucleus, when they were in Tau,
can be exchanged at superluminal speed and produce photons were strange in stable nuclei
a-proton in the nucleus was strange, he may have neutral charge, if at xi, with a down and an up during strange. decay times of about 10 ^ -10 seconds.,
The core neutral strange could traverse spaces of about one micron, and collide with a normal nucleus.
In this case, approaching in neutral charge to a normal proton, at a distance of about three femto - meters, induces a phase strange also approached in the proton.
The proton approached, could go in strange omega-phase, and in this case, the repulsive force Columbian may dismiss the nucleus strange neutral approaching.
At a distance of about two femto - meters, the strong force could equalize the electric repulsion Columbian that forms between a proton in phase strange neutral slightly negative and a proton in strange negative phase, and form-close a core of two components strange.
We have a strange halo nucleus, which decays in a time of 10-10 seconds,
with the issue of excess energy, with more than 1000 billion pairs of photons, 10 ^ +12 photons in broad energy range a total energy of about 1.3 Mev, with production of a deuterium nucleus

The single proton exploits the total energy of the electrons in tornado, hurricane or electronic, reaching energies higher than medium ones, such as hurricanes make coherent overall kinetic thermal energy of an entire area, to put it in a smaller area , and thus increase the overall energy of air molecules that form the vortex destructive hurricane. In the same way, the electrons gathered harvest energy from the photons they absorb from the magnetic fields in the area, then transmitting photons exchange energy to an electron Tau within the nucleus, and then the quarks of the nucleus concerned, which increases the internal energy.
The energy is transmitted with particles assioniche-gremlins, in practice photons in superluminal speed,
almost instantaneous speed, greater than about 10 ^ +62 c, which makes them "lightweight, virtually no mass.
Disorders, such as the impossibility of a debt against are in the exchange of energy referent, invalidates these photons into photons assionici normal speed with light and mass-energy "normal.
The graphic surfaces of Feynmann products, are not to scale, simply represent the idea of the reactions represented.

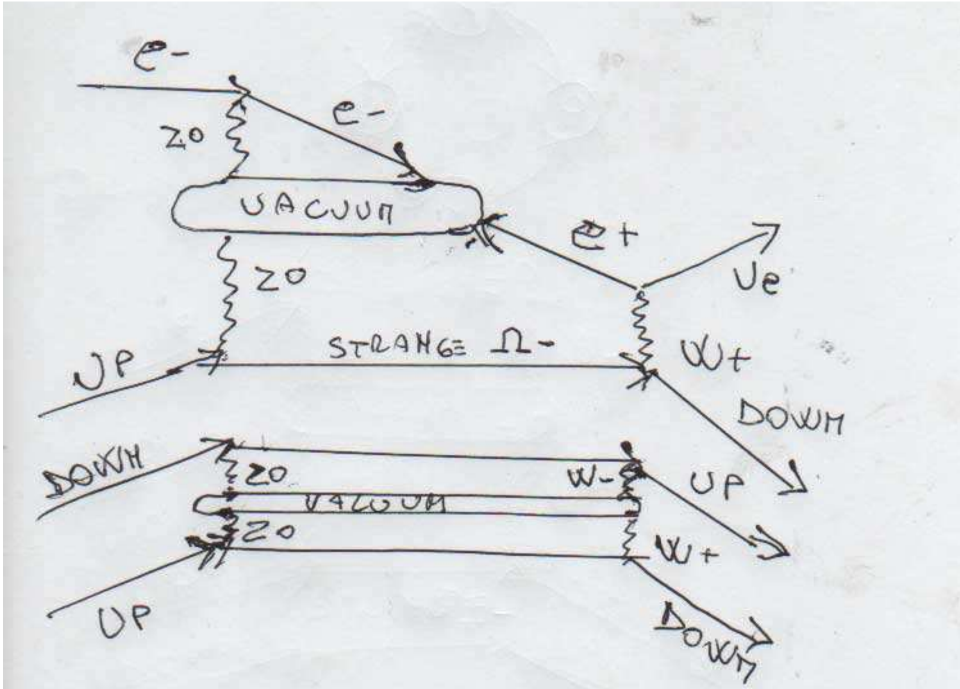

Fig 8 - diagram of core H with electronic capture to and contemporary transformation in $-\Omega$

hyperon $\Omega-$, has negative charge 1 -, and produces a repulsive effect on Colombian a proton neutral xi in phase, but at a distance of about three femto.metri, is balanced with the strong force with the two nuclei to form u n nucleus halo strange. A two-component a charge denied that decays in time around 10 ^-10sec been fondamentale energy of a deuterium
Normal-phase electronic ..
We could then have a proton where only two quarks are being strange,
in this case the approach to the normal proton, is similar to that of a neutron,
for the fields Colombians.
The approach of the nucleus strange, always gets at distances of less than 10-14m,
that the core "normal, Energize was strange, in this case we always have a core stat or omega and a nucleus in a state xi,
two nuclei in was negative and neutral, and at a distance of about 2-3 femtometri,
the strong force merges the two nuclei, but remains in equilibrium with the repulsive forces Colombian.
The core product, an excited nucleus strange, it starts to lose energy with pairs of photons with the same energy, but different spin, and the opposite direction.
We can estimate these photons in number about 10 +12,
in the energy range, between the RF emissions courtyard, infrared, blue and up to someone,
in some cases, up to soft X emissions.
I hypothesize that at the end of the process of decay, with the emission of the excess energy,
the strong force takes over, and the core melts completely, with emission of a neutrino.
We have also the emission of a single photon in pairs, with energy range
Between 10ev and Kev.
We can assume the initial issue of a neutrino, to preserve the kinetic energy of the nuclei of momentum, but with kinetic energies of the nuclei was almost in BEC, then the kinetic energies with very low ambient temperatures neutrinos suggests you may have a lot of energy low,
10Kev around the maximum,
and then be very, very difficult to detect.
Moreover, the species could be "sterile, increasing the difficulty of detection.
Only direct measurements, they can solve the problem.
Some possible reactions

$H+2(Z^*) \longrightarrow \Xi^*$
$H+3(Z^*) \longrightarrow \Omega^-$
$\Omega^- + \Xi^* \longrightarrow 2Hns^*$

2Hns * stands for neutral strange particle.

This particle could merge with or more nuclei, or isolated decay rapidly, in times of about 10 ^ -10 sec ..

$2Hns^* \text{-------->} D + \nu\varepsilon + 1{,}397 \text{ Mev}$

Or we could write the reaction equation in

H* + H* ----> D* ----> D + Summed pairs of photons (1.3 MeV) + **νε**

H * = proton was strange

D * = phase deuterium strange

. energy resulting from the mass defect of the product of deuterium bonding makes a positive energy balance of the merger

$\Xi^* + \Omega^{-*} \longrightarrow D \quad + \nu\varepsilon + \Sigma\gamma \, (1.397 \text{ Mev})$

Single decay

$Hns^* \longrightarrow H + \Sigma\gamma$

in this reaction the sum of photons that is returned to the eddies electronic pressure is not under consideration in the balance sheet is exactly what the return of the 'energy taken earlier by photons assionici,
assionici photons are taken from the outer electrons and photons are released assionici
electrons with zero energy balance, and with great efficiency, which is not produce
energy needed for a quantum entropy.

Reactions with fusion of deuterium

D*+D* ----> He4*----> He4 + sommatoria di fotoni (23,8 Mev) +νε

He4 * = elio4 in state strange

D * = deuterium in state strange

νε = Electron neutrino

Sum of photons = 10 +12 photons of various energies for about 23 Mev

note well, nothing forbids us to think that the photons are emitted in pairs,
where the one is in practice the anti-particle of the other.

In this way, the number of photons as particles, although huge, in the analysis of the equation, is equal to zero.

Remains the core of He4 and the neutrino, with the resulting number of particles = 2.

This makes the equation symmetric and correct.

The most notable of these equations is the energy return with photons, which does not occur as in the classic case of fusion "strong with single photon emission range, which is the most probable form of relaxation of the core.

In the case of these weak interactions, mergers or weak, we emission of photons waterfalls, with very wide spectrum.

It seems that the particles "remember that were energized at the beginning, by many photons-axions produced by the electrons in the vortex, and then may return the energy taken initially in the same way with decay times much wider than normal temps reactions "strong", with average time of 10-10s of "mergers weak to achieve relaxation to the ground state of the nuclei, compared to the average of 10-23sec" strong ..

Of note, the excess energy produced by the fusion, is not exchanged with photons assionici, but with normal photons, derived from the decay of photons assionic-gremlins, for 'inability to find debts of energy in the electrons.
The electrons in the vortices are able to intercept, absorb and then re-emit a frequency.
The excess energy produced in very broad spectrum including .. the photons emitted from the nucleus.
The vortex could be destroyed in this way by the energies received, and then reform,
if environmental conditions permit.
From the experimental data it seems that the fields assionici, and the vortices of electrons, are particularly favored in energy very limited.
The enormous dissipation of entropy produced by these reactions, it seems very compatible with life processes.
The behavior of neutral strange particles is very complex and in some cases may also merge with nuclei at high atomic number, with many possible permutations.
The reaction of a proton H with production of omega-. produce a neutron in the final stage.
This reaction defines the golden rule
Each quark-induced phase to a strange, decays into its opposite, from down to up. up or down.

In this case, as empirical observations, the proton being strange Xi neutral, decays into a proton again, without the production of neutrinos.

$$P + (2Z^\circ *) \longrightarrow \Xi^\circ$$
$$\Xi^\circ \longrightarrow P$$

Important to note how, in this case, the Xi ° has possibility of merging with a core with many protons, and in this case produce different reaction products.
In the case, for example number of Fe56 I would, as final products

Fe56 + omega- ——> Fe57

Fe56 + Xi° ——> Co57

Interestingly, for the proton in the state of Xi °, neutral if not done any fusion reaction, in times of 10-10 sec, we find the initial pro tone,
with exchange of energy balanced, and would have no particular effect, even a slight increase in entropy in the environment ..
In passing billions of years, the incessant exchange of photons normal - axions internuclear, could be producing a quantum entropy No in environment , and in this case we have the decay of the proton.
The proton No omega-ell or state if it fails to melt, after 10.10 sec, neutron decays into
With the production of entropy in 'environment.
The case of the deuterium is or complex,
We in of electrons to give energy simultaneously to the proton and neutron constituents the D, which interact between them to transform in hyperon strange Ξ a core D "normal.
In this case, the vortices of electrons cone production the energy required to excite the quark interior of deuterium, which interact between them., And form the D * strange.
The approach of a D * strange neutral with kinetic rate very low, strange, therefore without repulsion Colombian, to a normal D, au distance of about 3 Fento. Meters, 10 ^-15m, produces a state of excitation induced strange even D in normal.
At this point, between 2 strange neutral, with a slightly negative electrical charge, rises the Coulomb barrier, that before the transformation was strange in the normal D, however, was attractiveness.

But the proximity of two femto-meter, allows the strong force to intervene and paste the two into a single particle strange halo.
The strong force intervenes with normal speed, and closes the two nuclei in one,
with the prompt issuance of a neutrino to conserve the kinetic energy,
(The two nuclei are in a state or quasi-BEC)
but this is very limited, so we are in a range of less than 10Kev, and then
the bones of these results could neutrinos or re king was brought to the normal measuring instruments.
The neutrinos may also be sterile in nature, no magnetic moment,
and then be even more difficult to detect.
The strong force acts to produce a defined nucleus, with the normal speed, produces in this case a strange excited nucleus, which is recomposed in normal nucleus of deuterium in 10 ^ -10 seconds., while in the case of normal fusion, the deuterium nucleus excited product, is forced
to decay in a time of 10-23 seconds with the emission of a single gamma photon.
It is not possible to observe a nucleus excited for times of 10 ^ -23 seconds,
but for our ability to measure, even an excited nucleus for 10 ^ -10 is virtually impossible to detect.

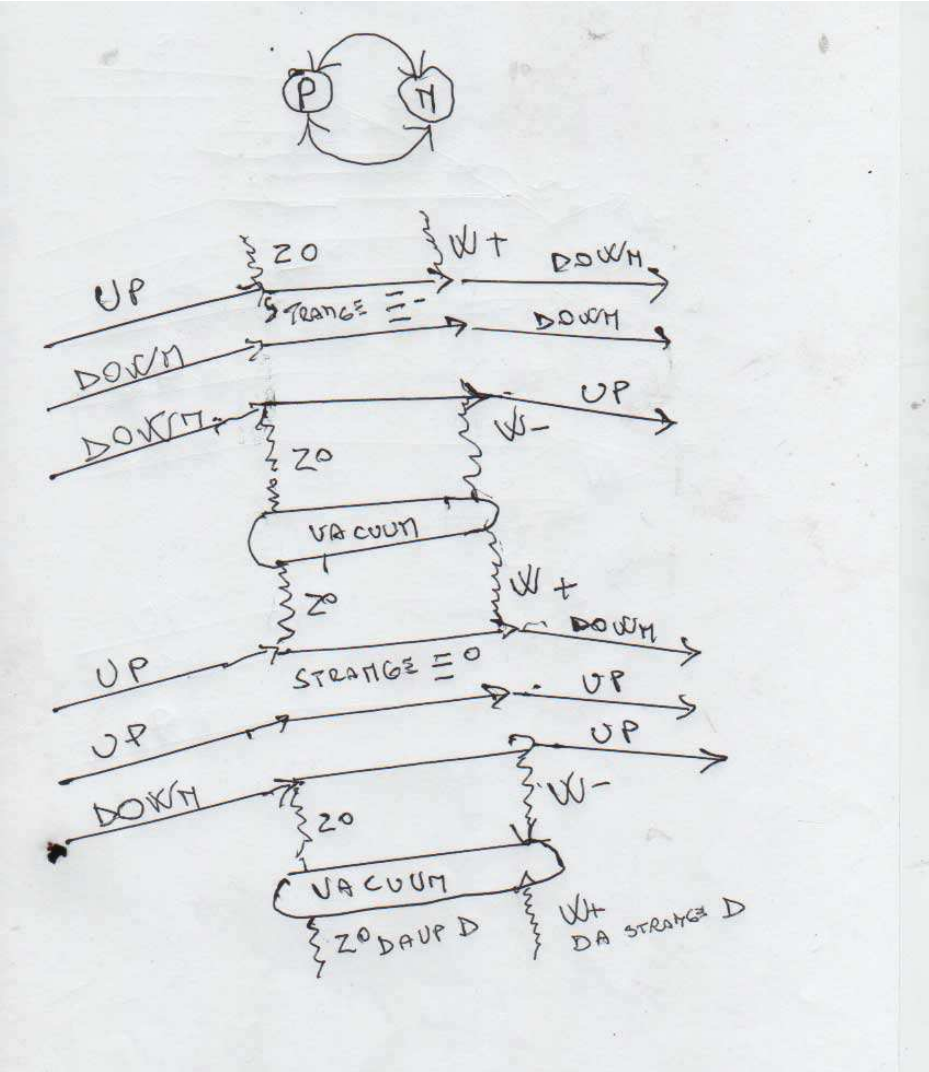

Fig 9 - diagram exciting car chain with formation of P + N ---- >Ξ

$N + (2Z° *) ——> Ξ^-$

$P + (2Z° *) ——> Ξ^°$

$Ξ° + Ξ^- ——> D *$

the negative strange particle decays, in times of 10 ^-10sec, in

D ε∗(4 W∓) ——–> D2

in particular

4 W ∓   they cancel the debt repayment of the vacuum, in a time of 1 ^ 0-10sec and get back D2 decade

(Ξ° Ξ–   +4 W∓   ) ——–> D2

. With

Ξ°   —> P

Ξ–   —> N

The strange particle negative has high chances of merging with normal D, that as in the case of hydrogen, passes in phase strange

2Ds*- + D* ——–> 4He s*n

–In practice, glue so weak particles with D 2 Ξ to form 4He, and with the proton and neutron decay respectively in the part strange we get, the formation of a nucleus of 4He normal, the emission of the excess energy the mass defect, about 23Mev, with a huge waterfall at widest spectrum of photons of energy.
final result of the reaction-decay

4He*sn ——–> 4He   + Σy(23 mev) +**ν**ε

formation of the particles resulted 4He * ns, implies a huge possibility of various transmutations
Another possible process, the less likely

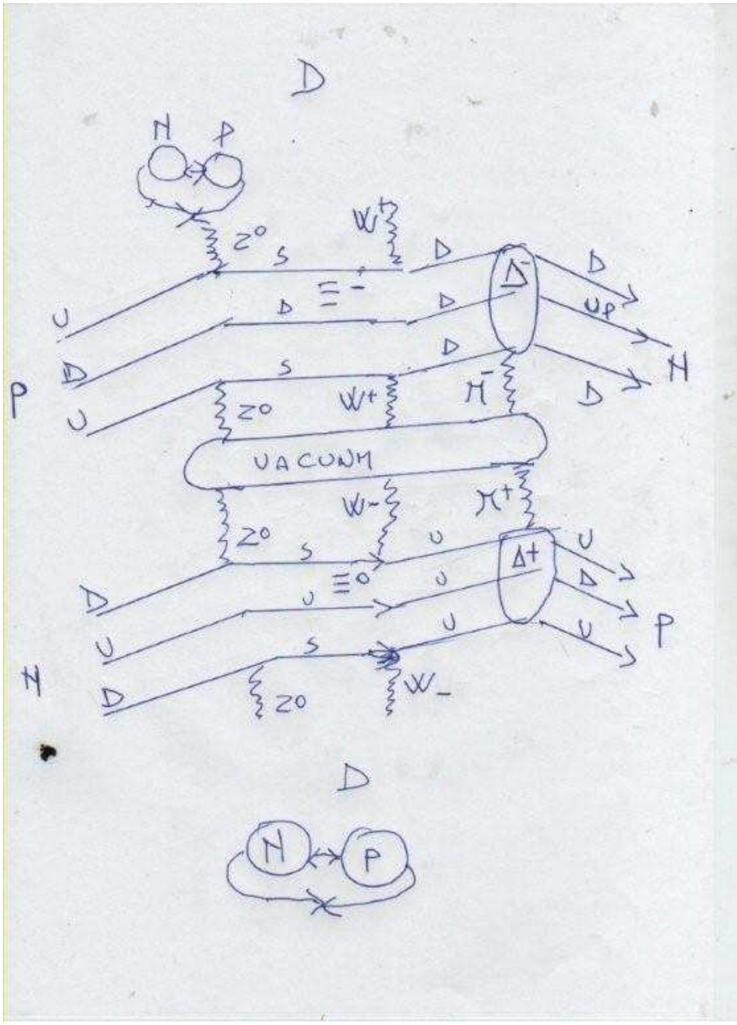

Fig.10 -. beta-decay diagram

in this case, the interactions between the two nucleons quark constituents of deuterium, produce a nucleon from the proton and the neutron Ξ°a nucleon Ξ–
The two nucleons, if you do not interact and fuse with other nuclei, decay in 10-10 sec, in Δ - Δ and +, and in times of about 10-23 sec and proto neutron decay into it with the emission of pion + -. and cancel each other in a vacuum.

Interestingly, the phase strange produces 2 2 Ξ–, which can melt, within the decay times of 10-10sec, with two deuterium nuclei strange negative, to form a core of strange 8 nucleons are neutral, which may merge with other 2 D, to produce a core of C12. final, and power output.

In mixtures of deuterium and tritium, D and T, we have interesting reactions
If the particle is excited in strange D *, we have the reaction

D* + T* ———>5He
5HE de falls into 4He + N
In q u esto case the reaction produces free neutrons.
If we have T * strange, we have reaction

T* + D* ———> 5Li

5Li → 4He + P
Or

T*+T* → 6Li stabile

We might have in mixtures of 50% of hydrogen and deuterium,
also type reactions

H*+ D* → He3
Or

D*+H* → T

In this case we could detect tritium, and would be an interesting test for cold fusion.
We could have, in mixtures of 50% of D and T,
also the reactions

D*+T* → He5 → He4 +N
Or

T*+D* → Li5 → He4 +P

Conclusions

Many unexplained observations of nuclear phenomena unexpected, may have a sp iegazione empirical putting together the information that in the last twenty years have accumulated in the fields of the physical at high energies, in the fields of chemistry and nuclear physics, in cosmological observations and also in unexpected processes in organisms, living, as the photo effect - synthetic.
If we assume the existence of fields assionici, with particles gremlins extremely similar to photons, which can
To interact with each other at super speeds - luminal nuclei and electrons at distances that can reach the rag micron, we will re possible responses to the questions that put the phenomena of cold fusion.
We can then have mergers in cold nuclei with relatively low energy environment.
Even the phenomena of decay and alpha decay / fission induced by conditions
Details of the environment.
For some reason the ambient temperature around 300K seems to be the most favorable for these phenomena, which appear to be of fundamental importance for life processes

I want to thank in particular

Mr Renzo Socialites, which has produced many experimental tests,
and has addressed many empirical observations,
with a huge personal work and tireless sacrifice.
I also learned a lot and reported by the experimental work of Mr. Miles, Mr. Celani,
Mr. Arata, Miss Boss, Mr. Filippov, mr Vysotskij. Heffner mr, mr Maulenberg
A special thanks to Mr. Takahashi, Mr. Mizuno, Mr. Fisher,
Mr. Abd Lomax, and many others, and many others that are cited in the references.

Table of sinboli

α = alpha decay in nuclei

β = beta decay in nuclei

γ = photon

Δ = delta phase in the nucleus

Σ = sigma hyperon

Λ = lambda hyperon

Ξ = Xi hyperon

Ω = omega hyperon

References

Neutrons from Piezonuclear Reactions
Fabio Cardone 1,2, Giovanni Cherubini 3,4, Roberto Mignani 2,5,
Walter Perconti 1, Andrea Petrucci 1,5, Francesca Rosetto 5,6
and Guido Spera 7
1Istituto per lo Studio dei Materiali Nanostrutturati (ISMN CNR)
Via dei Taurini - 00185 Roma, Italy
2GNFM, Istituto Nazionale di Alta Matematica F.Severi
Citt`a Universitaria, P.le A.Moro 2 - 00185 Roma, Italy
3ARPA Radiation Laboratories Via Montezebio - 01100 Viterbo, Italy
4 Facolt`a di Medicina, Universit`a degli Studi La Sapienza
P.le A. Moro, 2 - 00185 Roma, Italy
5Dipartimento di Fisica E.Amaldi, Universit`a degli Studi Roma Tre
Via della Vasca Navale, 84 - 00146 Roma, Italy
6ARPA Chemical Laboratories Via Montezebio - 01100 Viterbo, Italy
7CRA - IS.Pa.Ve., Chemical Section
Via C.G. Bertero, 22 - 00156 - Roma, Italy
Piezonuclear reactions
Fabio Cardone1,2, Roberto Mignani2−3 and Andrea Petrucci1
1Istituto per lo Studio dei Materiali Nanostrutturati (ISMN – CNR)
Via dei Taurini - 00185 Roma, Italy
2GNFM, Istituto Nazionale di Alta Matematica "F.Severi"
Citt`a Universitaria, P.le A.Moro 2 - 00185 Roma, Italy
3Dipartimento di Fisica "E.Amaldi", Universit`a degli Studi "Roma Tre"
Via della Vasca Navale, 84 - 00146 Roma, Italy
On the possible physical mechanism of Chernobyl catastrophe and the unsoundness of official conclusion
A.A. Rukhadze,* L.I. Urutskojev, D.V. Filippov****
** General Physics Institute, Russian Academy of Science*
*** RECOM, Russian Research Center «Kurchatov Institute»*
e-mail: recom@hotmail.ru, shevchenko_e@mail.ru
Adamenko S and mr Vysotskii V (2005) Observation and modeling of the ordered motion of hypothetical magnetically charged particles on the multilayer surface and the problem of low-energy fusion. Condensed Matter Nuclear Science, ICCF-12, Yokohama, Japan, World Scientific

Piezonuclear neutrons from fracturing of inert solids
F. Cardone a,b, A. Carpinteri c, G. Lacidogna c,*
a Istituto per lo Studio dei Materiali Nanostrutturati (ISMN-CNR),
Via dei Taurini 19, 00185 Roma, Italy
b Dipartimento di Fisica "E. Amaldi", Universita degli Studi "Roma Tre",
Via della Vasca Navale, 84-00146 Roma, Italy
c Department of Structural Engineering and Geotechnics, Politecnico di Torino,
Corso Duca degli Abruzzi 24, 10129 Turin, Italy

Resource Letter QCD-1: Quantum Chromodynamics
Andreas S. Kronfeld_ and Chris Quiggy
Theoretical Physics Department, Fermi National Accelerator Laboratory, P.O. Box 500, Batavia, Illinois 60510 USA
(Dated: October 14, 2010)

\Asymptotic freedom and quantum chromodynamics:

the key to the understanding of the strong nuclear forces," Advanced Information on the Nobel Prize in Physics, http://nobelprize.org/nobel_prizes/physics/laureates/2004/phyadv04.pdf. (E{I)

Some encyclopedia articles on QCD are

4. \Quantum chromodynamics," A. S. Kronfeld in Macmillan Encyclopedia of Physics, vol. 3, edited by J. S. Rigden, pp. 1260{1264 (Macmillan, New York, 1996). [doi: 10.1223/0028973593]. (E{I)

5. \Quantum chromodynamics," G. Sterman in Encyclopedia of Mathematical Physics, edited by J.-P. Fran_coise, G. L. Naber, and Tsou Sheung Tsun, pp. 144{153 (Elsevier, Amsterdam, 2006). [hep-ph/0512344]. (I{A)

6. \Quantum chromodynamics," C. Quigg in McGraw-Hill Encyclopedia of Science & Technology, vol. 14, pp. 670{676 (McGraw-Hill, New York, 2007), 10th ed. [doi: 10.1036/1097-8542.562500]. (E{I)

For a book-length exposition of the wonders of QCD, see

7. The Lightness of Being: Mass, Ether, and the Uni_cation of Forces, F. Wilczek (Basic Books, New York, 2008). (E)

The rest of this Resource Letter is organized as follows. We begin in Sec. II by reviewing the basics of the theory of QCD, giving its Lagrangian, some essential aspects of its dynamics, and providing a connection to earlier ideas. In Sec. III we cover literature on theoretical tools for deriving physical consquences of the QCD Lagrangian. Section IV covers the most salient aspects of the confrontation of QCD with experimental observations and measurements. Section V situates QCD within the broader framework of the standard model of particle physics. We conclude in Sec. VI with a brief essay on frontier problems in QCD. Appendix A gives links to basic online resources.

II. QCD

As a theory of the strong interactions, QCD describes the properties of hadrons. In QCD, the familiar mesons (the pion, kaon, etc.) are bound states of quarks and antiquarks; the familiar baryons (the proton, neutron, _(1232) resonance, etc.) are bound states of three quarks. Just as the photon binds electric charges into atoms, the binding agent is the quantum of a gauge _eld, called the gluon. Hadrons made of exclusively of gluons, with no need for valence quarks, may also exist and are called glueballs. Properties of hadrons are tabulated in

8. \Review of particle physics," C. Amsler et al., Particle Data Group, Phys. Lett. B667, 1{1340 (2008) [doi: 10.1016/j.physletb.2008.07.018] [http://pdg.lbl.gov]. (E{I{A)

10. \Ultraviolet behavior of non-Abelian gauge theories," D. J. Gross and F. Wilczek, Phys. Rev. Lett. 30, 1343{1346 (1973) [doi: 10.1103/PhysRevLett.30.1343]. (A)

11. \Reliable perturbative results for strong interactions," H. D. Politzer, Phys. Rev. Lett. 30, 1346{1349 (1973) [doi: 10.1103/PhysRevLett.30.1346]. (A)

Asymptotic freedom points to the existence of a domain in which the strong interactions become su_ciently weak that scattering processes can be treated reliably in perturbation theory using techniques based on the evaluation

of Feynman diagrams. The path to asymptotic
freedom is described in the Nobel Lectures,
12. \The discovery of asymptotic freedom and the emergence
of QCD," D. J. Gross, Rev. Mod. Phys. 77, 837{849
(2005) [doi: 10.1073/pnas.0503831102]. (I)
13. \The dilemma of attribution," H. D. Politzer,
Rev. Mod. Phys. 77, 851{856 (2005) [doi:
10.1073/pnas.0501644102]. (I)
14. \Asymptotic freedom: from paradox to paradigm,"
F. Wilczek, Rev. Mod. Phys. 77, 857{870 (2005)
[hep-ph/0502113]. (I)
For another view of the historical setting, see
15. \When was asymptotic freedom discovered? Or
the rehabilitation of quantum _eld theory," G.
't Hooft, Nucl. Phys. Proc. Suppl. 74, 413{425 (1999)
[hep-th/9808154]. (A)
\Mass without mass I: most of matter," F.
Wilczek, Phys. Today 52, 11{13 (November, 1999) [doi:
10.1063/1.882879]. (E)
19. \Mass without mass II: the medium is the mass-age,"
F. Wilczek, Phys. Today 53, 13{14 (January, 2000) [doi:
10.1063/1.882927]. (E)
20. \The origin of mass," F. Wilczek,
Mod. Phys. Lett. A21, 701{712 (2006) [doi:
10.1142/S0217732306020135]. (I)
21. \Spontaneous symmetry breaking as a basis of particle
mass," C. Quigg, Rept. Prog. Phys. 70, 1019{1054
(2007) [arXiv:0704.2232 [hep-ph]]. (I{A)
The development of lattice gauge theory has made possible
a quantitative understanding of how these phenomena
emerge at the low-energy scale associated with con-
_nement.
22. \Con_nement of quarks," K. G. Wilson,
Phys. Rev. D10, 2445{2459 (1974) [doi:
10.1103/PhysRevD.10.2445]. (A)
The essential ideas are described in
23. \The lattice theory of quark con_nement," C. Rebbi,
Sci. Am. 248, 54{65 (February, 1983). (E)
24. \Quarks by computer," D. H. Weingarten, Sci. Am.
274, 116{120 (February, 1996). (E)
and how it all began is recalled in
25. \The origins of lattice gauge theory," K. G.
Wilson, Nucl. Phys. Proc. Suppl. 140, 3{19 (2005)
[hep-lat/0412043]. (I)
Visualizations of the QCD vacuum, the structure of the
proton, and other insights from lattice QCD are presented
and explained at
26. \Visualizations of QCD," D. B. Leinweber,
http://www.physics.adelaide.edu.au/~dleinweb/
VisualQCD/Nobel/. (E{I{A)
An example is shown in Fig. 1, depicting the process
p $ _K+ on a background of the gluonic ground state.
Lattice gauge theory is yielding a growing range of nonperturbative
computations of hadron properties that are
needed to interpret experiments and observations in particle
physics, nuclear physics, and astrophysics:
27. \Quantum chromodynamics with advanced computing,"
A. S. Kronfeld, USQCD Collaboration, J.
Phys. Conf. Ser. 125, 012067 (2008) [arXiv:0807.2220
[physics.comp-ph]]. (E{I)

[http://cdsweb.cern.ch/search.py?recid=570209].
(E{I)

Zweig used the term \aces" for quarks. An early review of the quark model is in

51. \Quarks," M. Gell-Mann, Acta Phys. Austriaca Suppl. 9, 733{761 (1972). (I{A)

and helpful compilations of references on the quark model appear in

. \Resource letter Q-1: quarks," O. W. Greenberg, Am. J. Phys. 50, 1074{1089 (1982) [doi: 10.1119/1.12922]. (E{I{A)

. \Hadron spectra and quarks," S. Gasiorowicz and J. L. Rosner, Am. J. Phys. 49, 954{984 (1981) [doi: 10.1119/1.12597]. (I{A)

A challenge to these ideas came from the nonobservation of free, fractionally-charged particles. The current limits are collected in Ref. 8, and descriptions of the techniques may be found in

54. \Quark search experiments at accelerators and in cosmic rays," L. Lyons, Phys. Rept. 129, 225{284 (1985) [doi: 10.1016/0370-1573(85)90011-0]. (I)

55. \Searches for fractional electric charge in terrestrial materials," P. F. Smith, Ann. Rev. Nucl. Part. Sci. 39, 73{111 (1989) [doi: 10.1146/annurev.ns.39.120189.000445]. (I)

56. \Searches for fractionally charged particles," M. L. Perl, E. R. Lee, and D. Loomba, Ann. Rev. Nucl. Part. Sci. 59, 47{65 (2009) [doi: 10.1146/annurev-nucl-121908-122035]. (I)

With con_nement in QCD, however, the search for isolatable fractional charges is a somewhat more subtle subject, perhaps explaining why searches for fractionallycharged particles have been to no avail.

3. Quarks with color

A second challenge to the quark model lay in the spinand-statistics puzzle for the baryons. If the baryon $J = \frac{1}{2}$ octet and $J = \frac{3}{2}$ decuplet are taken to be composites of three quarks, all in relative s-waves, then the wave functions of the decuplet states appear to be symmetric in space_spin_isospin, in conict with the Pauli exclusion principle. As explicit examples, consider the □, formed of three (presumably) identical strange quarks, sss, or the $\_^{++}$, an isospin-$\frac{3}{2}$ state made of three up quarks, uuu. To reconcile the successes of the quark model with the requirement that fermion wave functions be antisymmetric, it is necessary to hypothesize that each quark avor comes in three distinguishable species, which we label by the primary colors red, green, and blue. Baryon wave functions may then be antisymmetrized in color. For a review of the role of color in models of hadrons, see

57. \Color models of hadrons," O. W. Greenberg and C. A. Nelson, Phys. Rept. 32, 69{121 (1977) [doi: 10.1016/0370-1573(77)90035-7]. (I{A)

Further observational evidence in favor of the colortriplet quark model is marshaled in

58. \Light-cone current algebra, $\_^0$ decay, and $e^+e^□$ annihilation," W. A. Bardeen, H. Fritzsch, and M. Gell-Mann in Scale and Conformal Symmetry in Hadron Physics, edited by R. Gatto (Wiley, New York,

1973), pp. 139{151, [hep-ph/0211388]. (A)
For a critical look at circumstances under which the number of colors can be determined in _0 ! decay, see
59. \Can one see the number of colors?," O. B□ar and U. J. Wiese, Nucl. Phys. B609, 225{246 (2001) [hep-ph/0105258]. (A)

Then the appropriate e_ective _eld theory is potential NRQCD (PNRQCD):
185. \Potential NRQCD: an e_ective theory for heavy quarkonium," N. Brambilla, A. Pineda, J. Soto, and A. Vairo, Nucl. Phys. B566, 275{310 (2000) [hep-ph/9907240]. (A)
PNRQCD provides a _eld-theoretic basis for understanding the success of the potential models of Sec. III B. For a review, consult
\E_ective _eld theories for heavy quarkonium," N. Brambilla, A. Pineda, J. Soto, and A. Vairo, Rev. Mod. Phys. 77, 1423{1496 (2005) [hep-ph/0410047]. (I{A)
NRQCD and PNRQCD have also been used to understand top-quark pair production at threshold. Top quarks decay before toponium forms:
187. \Production and decay properties of ultraheavy quarks," I. I. Y. Bigi, Y. L. Dokshitzer, V. A. Khoze, J. H. K□uhn, and P. M. Zerwas, Phys. Lett. B181, 157{163 (1986) [doi: 10.1016/0370-2693(86)91275-X]. (I{A)
188. \Threshold behavior of heavy top production in e^+e^- collisions," V. S. Fadin and V. A. Khoze, JETP Lett. 46, 525{529 (1987). (I{A)
189. \Production of a pair of heavy quarks in e^+e^- annihilation in the threshold region," V. S. Fadin and V. A. Khoze, Sov. J. Nucl. Phys. 48, 309{313 (1988). (I{A)
but top and antitop still orbit each other during their eeting existence. A useful review is
190. \Top-antitop pair production close to threshold: synopsis of recent NNLO results," A. H. Hoang et al., Eur. Phys. J. direct C2, 1{22 (2000) [hep-ph/0001286].

3. Soft collinear e_ective theory

In high-energy amplitudes, one often considers a jet of particles, the details of which are not detected. The semiinclusive nature of jets circumvents issues of infrared and collinear divergences, much like the Bloch-Nordsieck mechanism in QED:
191. \Note on the radiation _eld of the electron," F. Bloch and A. Nordsieck, Phys. Rev. 52, 54{59 (1937) [doi: 10.1103/PhysRev.52.54]. (I{A)
192. \Mass singularities of Feynman amplitudes," T. Kinoshita, J. Math. Phys. 3, 650{677 (1962) [doi: 10.1063/1.1724268]. (I{A)
193. \Degenerate systems and mass singularities," T. D. Lee and M. Nauenberg, Phys. Rev. 133, B1549{B1562 (1964) [doi: 10.1103/PhysRev.133.B1549]. (I{A)
The infrared and collinear degrees of freedom can be isolated in the soft collinear e_ective theory (SCET), _rst established for decays of B mesons:
194. \Summing Sudakov logarithms in $B \to X_s$ in effective _eld theory," C. W. Bauer, S. Fleming, and M. E. Luke, Phys. Rev. D63, 014006 (2000) [hep-ph/0005275]. (A)
195. \An e_ective _eld theory for collinear and soft gluons: heavy to light decays," C. W. Bauer, S. Fleming, D. Pirjol, and I. W. Stewart, Phys. Rev. D63, 114020 (2001)

[hep-ph/0011336]. (A)
196. \Soft-collinear factorization in e_ective _eld theory,"
C. W. Bauer, D. Pirjol, and I. W. Stewart, Phys.
Rev. D65, 054022 (2002) [hep-ph/0109045]. (A)
197. \Soft-collinear e_ective theory and heavy-to-light
currents beyond leading power," M. Beneke, A. P.
Chapovsky, M. Diehl, and T. Feldmann, Nucl. Phys.
B643, 431{476 (2002) [hep-ph/0206152]. (A)
Meanwhile, SCET has been applied to many high-energy
scattering processes, starting with
198. \Hard scattering factorization from e_ective _eld
theory," C. W. Bauer, S. Fleming, D. Pirjol, I. Z. Rothstein,
and I. W. Stewart, Phys. Rev. D66, 014017 (2002)
[hep-ph/0202088]. (A)
and more recently to many aspects of jets:
199. \On the structure of infrared singularities of gaugetheory
amplitudes," T. Becher and M. Neubert, JHEP
06, 081 (2009) [arXiv:0903.1126 [hep-ph]]. (A)
200. \Soft radiation in heavy-particle pair production:
all-order colour structure and two-loop anomalous dimension,"
M. Beneke, P. Falgari, and C. Schwinn,
Nucl. Phys. B828, 69{101 (2010) [arXiv:0907.1443
[hep-ph]]. (A)
201. \Factorization structure of gauge theory amplitudes
and application to hard scattering processes at the LHC,"
J.-y. Chiu, A. Fuhrer, R. Kelley, and A. V. Manohar,
Phys. Rev. D80, 094013 (2009) [arXiv:0909.0012
[hep-ph]]. (A)
202. \Factorization at the LHC: from PDFs to initial
state jets," I. W. Stewart, F. J. Tackmann, and
W. J. Waalewijn, Phys. Rev. D81, 094035 (2010)
[arXiv:0910.0467 [hep-ph]]. (A)
203. \Factorization and resummation of Higgs boson differential
distributions in soft-collinear e_ective theory,"
S. Mantry and F. Petriello, Phys. Rev. D81, 093007
(2010) [arXiv:0911.4135 [hep-ph]]. (A)
204. \Consistent factorization of jet observables in exclusive
multijet cross-sections," S. D. Ellis, A. Hornig, C.
Lee, C. K. Vermilion, and J. R. Walsh, Phys. Lett. B689,
82{89 (2010) [arXiv:0912.0262 [hep-ph]]. (

K.-H. Schmidt, B. Jurado, Phys. Rev. Lett. **104**, 212501 (2010).
M. Guttormsen et al., Phys. Rev. C **68**, 034311 (2003).
A. V. Voinov et al., Phys. Rev. C **79**, 031301 (2009).
M. Guttormsen et al., Phys. Rev. C **63**, 044301 (2001).
E. Algin et al., Phys., Rev. C **78**, 054321 (2008).
J. Blocki et al., Ann. Phys. (N.Y.) **113**, 330 (1978).
M. Blann, Nucl. Phys. A **213**, 570 (1973).
D. H. E. Gross, Microcanonical Thermodynamics, World Sientific, Lecture Notes in Physics, **Vol. 66**.
N. Bohr, Nature **137**, 344 (1936).
K.-H. Schmidt, B. Jurado, arXiv:1007.0741v1 [nucl-th].
. E.M. Burbidge, G.R. Burbidge, W.A. Fowler and F. Hoyle, *Rev. Mod. Phys.* **29,** 547 (1957).
K.L. Kratz et al, *Astrophys. J.* **402,** 216 (1993).
H. Schatz et al., *Phys. Rep.* **294,** 157 (1998).
. H. Schatz et al., *Phys. Rev. Lett.* **86,** 3741 (2001).
. M. Wiescher and H. Schatz, *Nucl. Phys. A* **693,** 269 (2001).
. J.A. Clark et al., *Phys. Rev. Lett.* **92,** 192501 (2004).
. D. Rodriguez et al., *Phys. Rev Lett.* **93,** 161104 (2004).
Quark Gluon Plasma. New Discoveries at RHIC: A Case of Strongly Interacting
Quark Gluon Plasma. Proceedings, RBRC Workshop, Brookhaven, Upton, USA,
May 14-15, 2004: D. Rischke, G. Levin, eds; 2005, 169pp; STAR Collaboration,
J. Adams et al. Nucl. Phys. A 757 (2005)102; PHENIX Collaboration, K. Adcox et

al., Nucl. Phys. A 757 (2005) 184.
S.M. Troshin, N.E. Tyurin, arXiv: hep-ph/0609248; Int. J. Mod. Phys. E **17**, 1619
(2008).
S.M. Troshin, Phys. Lett. B 5**97**, 391 (2004); S.M. Troshin, N.E. Tyurin, Int. J. Mod.
Phys. A **22**, 4437 (2007).
] STAR Collaboration, B. I. Abelev et al. , Phys. Rev. Lett. **105**, 022301 (2010).
I.M. Dremin, V.I. Manko, Nuovo Cim. A **111**, 439 (1998).
CMS Collaboration, V. Khachatryan et al., JHEP **1009**, 091 (2010).
S.M. Troshin, N.E. Tyurin, Mod. Phys. Lett. A **25**, 1315 (2010).
.A. Clark et al., *Phys. Rev C* **75,** 032801(R) (2007).
. M.B. Gomez-Hornillos et al., *Phys. Rev. C* **78,** 014311 (2008).
. P. Schury et al., *Phys. Rev. C* **75,** 055801 (2007).
. A. Petrovici , K.W. Schmidt, and A. Faessler, *Nucl. Phys. A* **605,** 290 (1996).
. P. Sarriguren, R. Alvarez-Rodriguez, and E. Moya de Guerra, *Eur. Phys. J.* **A24,** 193 (2005).
. K. Langanke, D. Dean, and W. Nazarewicz, *Nucl. Phys. A* **728,** 109 (2003).
. M.M. Sharma and J.K. Sharma, arXiv:0907.1055 [nucl-th]. E.W. Otten, in *Treatise on Heavy-Ion Science*, Vol 7, D.A. Bromley
(Ed.) (1989).6. N. Tajima, P. Bonche , H. Flocard, P.H. Heenen, and M.S. Weiss, *Nucl. Phys. A* **551,** 434 (1993).
. M.M. Sharma, M.A. Nagarajan, and P. Ring , *Phys. Lett. B* **312,** 377 (1993).
. M.M. Sharma, G.A. Lalazissis, and P. Ring, *Phys. Lett. B* **317,** 9 (1993).
. M.M. Sharma, G.A. Lalazissis, J. Konig, and P. Ring, *Phys. Rev. Lett.* **74,** 3744 (1995).
. M. Keim et al., *Nucl. Phys. A* **586,** 219 (1995).
. B.D. Serot and J.D. Walecka, *Adv. Nucl. Phys.* **16,** 1 (1986).
. M.M. Sharma, A.R. Farhan and S. Mythili, *Phys. Rev. C* **61** , 054306 (2000).
. M.M. Sharma and A.R. Farhan, *Phys. Rev. C* **65,** 044301 (2002).
. A. Jungclaus et al. *Phys. Rev. Lett.* **99,** 132501 (2007).
. M. Dworschak et al., *Phys. Rev. Lett*. **100,** 072501 (2008).
. P. Moller and J.R. Nix, *Nucl. Phys. A* **536,** 221 (1992).
G.A. Lalazissis and M.M. Sharma, *Nucl. Phys. A* **586,** 201 (1995).
. G.A. Lalazissis, S. Raman, and P. Ring, *At. Data Nucl. Data Tables* **66**, 1 (1999).
. P. Ring and P. Schuck, *The Nuclear Many-Body Problem* (Springer Verlag, New York, 1980).
. J.F. Berger, M. Girod, and D. Gogny, *Nucl. Phys. A* **428,** 32 (1984).
. C.J. Lister et al., *Phys. Rev. Lett*. **59,** 1270 (1987).
. E. Nacher et al., *Phys. Rev. Lett*. **92,** 232501 (2004).
. D.G. Jenkins, *Phys. Rev. C* **78,** 012801(R) (2008).
W. Nazarewicz et al., *Nucl. Phys. A* **435,** 397 (1985).
. C. Schutz, J. Haidenbauer, J. Speth, and J.W. Durso, *Phys. Rev. C* **57**, 1464 (1998).
. O. Krehl, C. Hanhart, S. Krewald, and J. Speth, *Phys. Rev. C* **62**, 025207 (2000).
. A.M. Gasparyan, J. Haidenbauer, C. Hanhart, and J. Speth, *Phys. Rev. C* **68**, 045207 (2003).
. J. Wess and B. Zumino, *Phys. Rev.* **163**, 1727 (1967).
. H. Haberzettl, K. Nakayama, and S. Krewald, *Phys. Rev. C* **74**, 045202 (2006).
. H. Haberzettl, *Phys. Rev. C* **56**, 2041 (1997).
F. Huang, M. Doring, H. Haberzettl, S. Krewald, and K. Nakayama, in preparation.
. CNS Data Analysis Center, The George Washington University, http://gwdac.phys.gwu.edu.
. B. Julia-Diaz, T.-S.H. Lee, A. Matsuyama, T. Sato, and L.C. Smith, *Phys. Rev. C* **77**, 045205 (2008).
10. K. Nakayama and H. Haberzettl, *Phys. Rev. C* **80**, 051001 (2009).
. J. Ajaka, et al., Phys. Rev. Lett. 81, 1797–1800 (1998).
. V. Crede, et al., Phys. Rev. Lett. 94, 012004 (2005), hep-ex/0311045.
. T. Nakabayashi, et al., Phys. Rev. C74, 035202 (2006).
. D. Elsner, et al., Eur. Phys. J. A33, 147–155 (2007), nucl-ex/0702032.
. J. C. McGeorge, et al., Eur. Phys. J. A37, 129–137 (2008), 0711.3443.
. M. Dugger, et al., Phys. Rev. C79, 065206 (2009), 0903.1110.
. M. Williams, et al., Phys. Rev. C80, 045213 (2009), 0909.0616.
M. W. Paris, and R. L. Workman, Phys. Rev. C82, 035202 (2010), 1004.0455.
A. M. Green, and S. Wycech, Phys. Rev. C55, 2167–2170 (1997), nucl-th/9703009.
. R. A. Arndt, A. M. Green, R. L. Workman, and S. Wycech, Phys. Rev. C58, 3636–3640 (1998), nucl-th/9807009.
. W. Zimmerman, Nuovo Cim. 21, 249–273 (1961).
W. Heitler, Math. Proc. Camb. Phil. Soc. 37, 291–300 (1941).
. R. J. Eden, P. V. Landshoff, D. I. Olive, and J. C. Polkinghorne, The Analytic S-matrix, Cambridge University Press, Cambridge, 1966, pp. 231–232.
. G. F. Chew, and S. Mandelstam, Phys. Rev. 119, 467–477 (1960).
. J. L. Basdevant, and E. L. Berger, Phys. Rev. D19, 239 (1979).
. R. A. Arndt, J. M. Ford, and L. D. Roper, Phys. Rev. D32, 1085 (1985).
. S. Ceci, A. Svarc, B. Zauner, M. Manley, and S. Capstick, Phys. Lett. B659, 228–233 (2008), hep-ph/0611094.
R. L. Workman, R. A. Arndt, and M. W. Paris, Phys. Rev. C79, 038201 (2009), 0808.2176.
R. A. Arndt, W. J. Briscoe, I. I. Strakovsky, and R. L. Workman, Phys. Rev. C74, 045205 (2006), nucl-th/0605082.
. R. A. Arndt, R. L. Workman, Z. Li, and L. D. Roper, Phys. Rev. C42, 1853–1863 (1990).
. K. M. Watson, Phys. Rev. 88, 1163–1171 (1952).

R. L. Workman, Phys. Rev. C74, 055207 (2006), nucl-th/0510025.W.-T. Chiang, S.-N. Yang, L. Tiator, and D. Drechsel, Nucl. Phys.
A700, 429–453 (2002),
nucl-th/0110034.

61. \The structure of the proton and the neutron," H. W.
Kendall and W. K. H. Panofsky, Sci. Am. 224, 60{75
(June, 1971). (E)

. Dirac. P. A. M. Proc. Roy. Soc. 1931. Ser. A. V. 133. P. 60.
. Polyakov A.M., Spectrum of particles in quantum field theory. Pis'ma ZhETF (JETP Lett.),.
1974. V. 20. No. 6. PP. 430-433.
Hooft G. Nucl. Phys., 1974. Ser. A. V. 133. P. 60.
Lipkin H. J.: Monoponucleosis – the wonderful things that monopoles can do to nuclei if they
are there. Monopole'83. Proceedings of NATO advanced research workshop, Ann Arbor, MI, USA, 6-9
Oct. 1983, pp. 347-358.
. Rubakov V.A. Superheavy magnetic monopoles and the decay of proton. Pis'ma ZhETF (JETP
Lett.), 1981. V 33. #12. PP. 141-153.
Lochak G., in: Advanced Electromagnetism (Foundations, Theory and Applications), T.W.
Barrett and D.M. Grimes ed., World Scientific Publishing Company, Singapore, 1995.
. Lochak G.,Ann. Fond. L. de Broglie, 8 (1983) 345, 9 (1984) 5. International journal of
Theoretical Physics, A. Blaquiere, S. Diner and G. Lochak ed., Springer, WIEN, N.Y., 1987.
. Schwinger I., Phys. Rev., p. 144, 1087, (1966)
. Urutskojev L.I., Liksonov V.I., Tsinoev V.G., Experimental detection of a "strange " radiation
and transformations of chemical elements. Prikladnaya Fizika (Applied Physics, in Russian), 2000. V. 4.
PP. 83-100.
. Kuz'mina I.E., Lobach Yu.N., Nuclear fuel and peculiar features of aerosols in installation
"Shelter". Atomic Energy. 1997. #1. PP. 39-44.
. Sobotovich E.V., Chebanenko S.I., Isotope contents of uranium in soils of the near zone of
Chernobyl Nuclear Power Plant. Physics Doklady, 1990, PP. 885-888.
. The report by The government commission on studying the origin and circumstances of the
accident at the Chernobyl Nuclear Power Plant. .The sources of and facts about the accident of April,
26, 1986, at the 4-th unit of the Chernobyl Nuclear Power Plant. The operations on handling the accident
and mitigating its implications.. pp. 12-32 (in Russian).
. Information on the accident at the Chernobyl Nuclear Power Plant and its implications,
submitted to IAEA. Atomic energy, 1986, vol. 61, # 5, pp. 302-320.
. Adamov E.O., Vasinger V.V., Vasilevskii V.P., et. al., An estimate of qualitative effects of
probable perturbations during the accident at CNPP. – In: The first international workshop on severe
accidents and their implications. .Nauka., Moscow, 1990.
. Adamov E.O., et. al., Analysis of first stage of the accident at 4-th unit of Chernobyl Nuclear
Power Plant, Atomic Energy, 1988, vol. 64, # 1, pp. 24-28.
. Afanasiev A.A., et. al., Analysis of the accident at Chernobyl Nuclear Power Plant with
allowance for reactor core, Atomic Energy, 1994, vol. 77, # 2, pp. 87-93.
. R&D Supplement to technical project RBMK, I.V. Kurchatov Atomic Energy Institute, internal
ref. № 35-877, 1966.
. Dollezhal N.A., Yemel'yanov I.Ya. Channel nuclear power reactor. .Atomizdat., Moscow,
1980, pp. 22-23, 34, 50, 96-97 (in Russian).
Kruzhilin G.I., On the features of explosion of the reactor .Reactor Big Power Channel 1000.
at Chernobyl Nuclear Power Plant. Physics Doklady, 1997. V. 354. # 3. PP. 331-332.
. Anderson E.B., Burakov B.E., Pazukhin Z.M., Did the fuel of the 4-th unit of Chernobyl
Nuclear Power Plant melt? Radiochemistry, 1992, #5, pp. 155-158.
. Shultz M.A., Control of nuclear reactors and power plants. Westinghouse Electric Corporation,
Pittsburgh, 1955 (PP. 29-70 in the book translated to Russian by "Publishers of the Foreign Literature",
Moscow, 1957).
. Kiselev A.N., Surin A.I., Checherov K.P., Post-accident survey of reactor at 4-th unit of
Chernobyl Nuclear Power Plant, Atomic Energy, 1996, vol. 80, # 4, pp. 240-247.
. Fermi E., Research papers (in Russian), vol. 2, .Nauka., Moscow, 1972, pp. 316-326.
. Belovitskii G.E., Rossel K., Instantaneous fission of nuclei of uranium by slow negative muons.
Brief communications on physics (P.N. Lebedev Physics Institute), No. 9-10, 1996.
13
. Fiorentini G. The coupling between magnetic charges and magnetic moments. Monopole'83.
Proceedings of a NATO advanced research workshop, ANN arbor, MI, USA, 6-9 oct. 1983, pages 317-

331.
. Volkovich A.G., Govorun A.P., Gulyaev A.A., Zhukov S.V., Kuznetsov V.L., Rukhadze A.A., Steblevskii A.V., Urutskojev L.I., Observations of effects of isotope ratio distortions in Uranium and breakdown of secular distribution for Thorium-234 under condition of electric explosion. Brief communications on physics (P.N. Lebedev Physics Institute), 2002, #8, pp. 45-50.
. Physical quantities. Handbook (Eds. Grigoriev I.S., Meilikhov E.Z.) .Energoatomizdat., Moscow, 1991 (in Russian).
. Gangrskii Yu.P., Dalkhsuren B., Markov B.N., The products of nuclear splitting. .Energoatomizdat., Moscow, 1986.
Kuznetsov V.D., Myshynskii G.V., Zhemennik V.I., Arbuzov V.I., In: Materials of 8th Russian Conference on cold transmutation of nuclei of chemical elements. Moscow, 2001, pp. 308-332.
. .The 1995 update to the atomic mass evaluation. by G. Audi and A.H. Wapstra, Nuclear Physics A595 vol. 4 p.409-480, December 25, 1995.
. Filippov D.V., Urutskojev L.I., Gulyaev A.A., Klykov D.L., Dontsov Yu.P., Novosjolov B.V., Steblevskii A.V., Stolyarov V.L., A phenomenological model for low-energy transmutation of nuclei of
chemical elements and its comparison with experiment (in press).
. Chernobyl's reporting. .Planeta., Moscow, 1988 (in Russian).
. Dyatlov A.S., .Chernobyl. As it was.. .NauchTechIzdat., Moscow, 2000 (in Russian).
. Sidney D. Drell, Norman M. Kroll, Mark T. Mueller, Stephen J. Parke, Malvin A. Ruderman .Energy loss of slowly moving magnetic monopoles in matter., Physical Review Letters, v.50, number
9, p 644-649.
D. Lynden-Bell, M. Nouri-Zonoz "Classical monopoles: Newton, NTU space, gravitation lens and atom specters", Review Modern Physics, Vol. 70, No. 2, April 1998, p. 421-445.
Aoki T, Kurata Y et al (1994) Helium and tritium concentrations in electrolytic cells. Trans Fusion Technol 26(4T):214
Apicella M, Castagna E et al (2005) Some recent results at ENEA. Condensed Matter Nuclear Science, ICCF-12, Yokohama, Japan, World Scientific
Arata Y and Zhang Y-C (2002) Formation of condensed metallic deuterium lattice and nuclear fusion. Proc Jpn Acad, Ser B 78(Ser. B):57
Bazhutov Y, Khrenov BA et al (1982) About one opportunity of second shower spectrum interpretation observed at small depth underground. Izv. AN USSR, ser Phys 46(9):2425
Bendkowsky V, Butscher B et al (2009) Novel binding mechanism for ultra-long range molecules. arXiv:0809.2961v1
Bockris J, Chien C et al (1992) Tritium and helium production in palladium electrodes and the fugacity of deuterium therein. Third International Conference on Cold Fusion, "Frontiers of Cold Fusion", Nagoya Japan, Universal Academy Press, Inc, Tokyo, Japan
Botta E, Bracco R et al (1995) Search for ^{4}He production from Pd/D_2 systems in gas phase. 5th International Conference on Cold Fusion, Monte-Carlo, Monaco, IMRA Europe, Sophia Antipolis Cedex, France
Botta E, Bressani T et al (1996) Measurement of ^{4}He production from D_2 gas-loaded Pd samples. Sixth International Conference on Cold Fusion, Progress in New Hydrogen Energy, Lake Toya, Hokkaido, Japan, New Energy and Industrial Technology Development Organization, Tokyo Institute of Technology, Tokyo, Japan.
Bush BF and Lagowski JJ (1998) Methods of generating excess heat with the Pons and Fleischmann effect: rigorous and cost effective calorimetry, nuclear products analysis of the cathode and helium analysis. The Seventh International Conference on Cold Fusion, Vancouver, Canada, ENECO, Inc, Salt Lake City, UT
Bush BF and Lagowski JJ et al (1991) Helium production during the electrolysis of D_2O in cold fusion experiments. J Electroanal Chem 304:271
Camp WJ (1977) Helium detrapping and release from metal tritides. J Vac Sci Technol 14:514
Case LC (1998) Catalytic fusion of deuterium into helium-4. The Seventh International Conference on Cold Fusion, Vancouver, Canada, ENECO Inc, Salt Lake City, UT
Cedzynska K and Will FG (1992) Closed-system analysis of tritium in palladium. Fusion Technol 22:156
Chien C-C, Hodko D et al (1992) On an electrode producing massive quantities of tritium and helium. J Electroanal Chem 338:189
Chien C-C and Huang TC (1992) Tritium production by electrolysis of heavy water. Fusion Technol 22:391
Chrzan DC and Wolfer WG (1991) Helium bubble growth by the dislocation pipe diffusion mechanism, Sandia National Laboratory
Chubb SR (2009) Overcoming the Coulomb Barrier and Related Effects Through Resonant Electrodynamics and Quantum Mechanics in the Fleischmann-Pons Excess Heat Effect Low-Energy Nuclear Reactions Sourcebook Volume 2. Marwan J and Krivit S, Oxford University Press
Chubb TA and Chubb SR (1991) Cold fusion as an interaction between ion band states. Fusion Technol 20:93
Claytor TN, Jackson DD et al (1996) Tritium production from a low voltage deuterium discharge of palladium and other metals. J New Energy 1(1):111
Claytor TN, Schwab MJ et al (1998) Tritium production from palladium alloys. The Seventh International Conference on Cold Fusion, Vancouver, Canada, ENECO, Inc, Salt Lake City, UT
Claytor TN, Tuggle DG et al (1992) Evolution of tritium from deuterided palladium subject to high electrical currents. Third International Conference on Cold Fusion, "Frontiers of Cold Fusion", Nagoya Japan, Universal Academy Press, Inc, Tokyo, Japan

Czerski K, Huke A et al (2004) Experimental and theoretical dscreening energies for the $_2H(d;p)_3H$ reaction in metal environments. Europhys Lett 68:363
Dash J (2004) Research at Portland State University, 1989-2004 on the interaction of metals with hydrogen isotopes. ASTI-5, Asti, Italy, www.iscmns.org/
De Ninno A, Del Giudice E et al (2008) Excess heat and calorimetric calculation: Evidence of coherent nuclear reactions in condensed matter at room temperature. ACS Symposium Series 998, Low-Energy Nuclear Reactions Sourcebook. Marwan J and Krivit SB, Washington, DC, American Chemical Society:127
DeNinno A, Frattolillo A et al (2004) $_4He$ detection during H/D loading of Pd cathodes. ASTI-5, Asti, Italy, www.iscmns.org/
Dufour J, Murat D et al (2000) Hydrex catallyzed transmutation of uranium and palladium: experimental part. 8th International Conference on Cold Fusion, Lerici (La Spezia), Italy, Italian Physical Society, Bologna, Italy
Fisher JC (2007) Outline of polyneutron theory. 8th International Workshop on Anomalies in Hydrogen/Deuterium Loaded Metals, Catania, Sicily, Italy, The International Society for Condensed Matter Science
Fleischmann M, Pons S et al (1989) Electrochemically induced nuclear fusion of deuterium. J Electroanal Chem 261:301 and errata in Vol 263
n Cold Fusion, Lahaina, Maui, Electric Power Research Institute 3412
Hillview Ave, Palo Alto, CA 94304
Gozzi D, Caputo R et al (1993) Helium-4 quantitative measurements in the gas phase of cold fusion electrochemical cells. Fourth International Conference on Cold Fusion, Lahaina, Maui, Electric Power Research Institute 3412 Hillview Ave, Palo Alto, CA 94304
Gozzi D, Cellucci F et al (1998) Erratum to "X-ray, heat excess and $_4He$ in the D/Pd system". J Electroanal Chem 452:251
Hagelstein PI (2010) Constraints on energetic particles in the Fleischmann–Pons experiment. Naturwissenschaften 97(4):345
Hagelstein PI and Chaudhary I (2008) Models revevant to excess heat production in Fleischmann-Pons experiments. ACS Symposium Series 998, Low-Energy Nuclear Reactions Sourcebook. Marwan J and Krivit SB, Washington, DC, American Chemical Society:249
Hansen LD, Jones SE et al (1998) A response to hydrogen + oxygen recombination and related heat generation in undivided electrolysis cells. J Electroanal Chem 447:225
Hansen WN (1991) Report to the Utah State Fusion/Energy Council on the analysis of selected Pons Fleischmann calorimetric data. Second Annual Conference on Cold Fusion, "The Science of Cold Fusion", Como, Italy, Societa Italiana di Fisica, Bologna, Italy
Holmlid L, Hora H et al (2009) Ultrahigh-density deuterium of Rydberg matter clusters for inertial confinement fusion targets. Laser and Particle Beams 27(3):529
Holst-Hansen P and Britz D (1995) Can current fluctuations account for the excess heat claims of Fleischmann and Pons? J Electroanal Chem 388:11
Huke A, Czerski K et al (2008) Enhancement of the deuterium-fusion reactions in metals and its experimental implications. arXiv:o805,4538v1
Isobe Y, Uneme S et al (2002) Search for multibody nuclear reactions in metal deuteride induced with ion beam and electrolysis methods. Jpn J Appl Phys 41(3):1546
Isobe Y, Uneme S et al (2000) Search for coherent deuteron fusion by beam and electrolysis experiments. 8th International Conference on Cold Fusion, Lerici (La Spezia), Italy, Italian Physical Society, Bologna, Italy
Iwamura Y, Itoh T et al (2005) Observation of surface distribution of products by X-ray fluorescence spectrometry during D_2 gas permeation through Pd cathodes. Condensed Matter Nuclear Science, ICCF-12, Yokohama, Japan, World Scientific
Iwamura Y, Itoh T et al (2004) Observation of nuclear transmutation reactions induced by D_2 gas permeation through Pd complexes. ICCF-11, International Conference on Condensed Matter Nuclear Science, Marseilles, France, World Scientific
Iwamura Y, Sakano M et al (2002) Elemental analysis of Pd complexes: effects of D_2 gas permeation. Jpn J Appl Phys A 41(7):4642
Jones JE, Hansen LD et al (1995) Faradaic efficiencies less than 100% during electrolysis of water can account for reports of excess heat in 'cold fusion' cells. J Phys Chem 99:6973
Kainthla RC, Szklarczyk M et al (1989) Eight chemical explanations of the Fleischmann-Pons effect. Hydrogen Energy 14(11):771
Yokohama, Japan, World Scientific
Karabut AB (2007) Excess heat power registration in high voltage electrolysis and discharge systems. International Conference on Condensed Matter Nuclear Science , ICCF-13, Sochi, Russia, Tsiolkovsky Moscow Technical University
Kasagi J (2008) Screening potential for nuclear reactions in condensed matter. ICCF-14, International Conference on Condensed Matter Nuclear Science, Washington, DC, www.LENR.org
Kasagi J, Yuki H et al (1998) Strongly enhanced Li + D reaction in Pd observed in deuteron bombardment on PdLix with energies between 30 and 75 keV. J Phys Soc Japan 73:608-612
Kaushik TC, Shyam A et al (1990) Preliminary report on direct measurement of tritium in liquid nitrogen
Kervran CL (1963) Transmutations biologiques, metabolismes aberrants de l'asote, le potassium et le magnesium. Librairie Maloine S A, Paris
Kervran CL (1972) Biological transmutations, Swan House Publishing Co
Kervran CL (1980) Biological transmutation, Beekman Publishers, Inc

Kim YE (2010) Bose-Einstein Condensate Theory of Deuteron Fusion in Metal. PNMBTG-1-10, Purdue Univ
Komaki H (1992) Observations on the biological cold fusion or the biological transformation of elements. Third International Conference on Cold Fusion, "Frontiers of Cold Fusion", Nagoya Japan, Universal Academy Press, Inc, Tokyo, Japan
Komaki H (1993) An Approach to the Probable Mechanism of the Non-Radioactive Biological Cold Fusion or So-Called Kervran Effect (Part 2). Fourth International Conference on Cold Fusion, Lahaina, Maui, Electric Power Research Institute 3412 Hillview Ave, Palo Alto, CA 94304
Kozima H (2000) Neutron drop: condensation of neutrons in metal hydrides and deuterides. Fusion Technol 37(May):253
Lipson AG, Miley G et al (2005) Enhancement of first wall damage in ITER type Tokamak due to LENR effects. Condensed Matter Nuclear Science, ICCF-12, Yokohama, Japan, World Scientific
Lochak G and Urutskoev L (2004) Low-energy nuclear reactions and the leptonic monopole. 11th International Conference on Cold Fusion, Marseilles, France, World Scientific Co
Matsumoto T (1990) Prediction of new particle emission on cold fusion. Fusion Technol 18:647
Matsumoto T (1993) Cold fusion experiments with ordinary water and thin nickel foil. Fusion Technol 24:296
Matsunaka M, Isobe Y et al (2002) Studies of coherent deuteron fusion and related nuclear reactions in solid. The 9th International Conference on Cold Fusion, Condensed Matter Nuclear Science, Tsinghua Univ, Beijing, China, Tsinghua Univ, Beijing, China
McKibben JL (1995) Can cold fusion be catalyzed by fractionally-charged ions that have evaded FC particle searches. Infinite Energy 1(4):14
McKibben JL (1996/1997) Strange-particle catalysis in the production of COH_2 gas or iron. Infinite Energy 2(11):37
Miles M, Imam MA et al (2000) Excess heat and helium production in the palladium-boron system. Trans Am Nucl Soc 83:371
Miles MH and Bush BF (1994) Heat and helium measurements in deuterated palladium. Trans. Fusion Technol 26(#4T):156
Miles MH, Hollins RA et al (1993) Correlation of excess power and helium production during D_2O and H_2O electrolysis using palladium cathodes. J Electroanal Chem 346:99
Miley G, Hora H et al (2007) Cluster reactions in low energy nuclear reactions (LENR). 8th International Workshop on Anomalies in Hydrogen/Deuterium Loaded Metals, Catania, Sicily, Italy, The International Society for Condensed Matter Science
Miley G and Shrestha P (2008) Transmutation reactions and associated low-energy nuclear reactions effects in solids. ACS Symposium Series 998, Low-Energy Nuclear Reactions Sourcebook. J. Marwan and S. B. Krivit. Washington, DC, American Chemical Society:173
Miskelly GM, Heben MJ et al (1989) Analysis of the published calorimetric evidence for electrochemical fusion of deuterium in palladium. Science 246:793
Mizuno T, Akimoto T et al (1998) Neutron and heat generation induced by electric discharge. J New Energy 3(1):33
Mizuno T, Akimoto T et al (1998) Confirmation of the changes of isotopic distribution for the elements on palladium cathode after strong electrolysis in D_2O solutions. Int J Soc Mat Eng Resources 6(1):45
Mizuno T, Ohmori T et al (1996) Anomalous isotopic distribution in palladium cathode after electrolysis. J New Energy 1(2):37
Mizuno T, Ohmori T et al (1996). Anomalous isotopic distribution of elements deposited on palladium induced by cathodic electrolysis. Denki Kagaku oyobi Kogyo Butsuri Kagaku 64: 1160 (in Japanese).
Morrey JR, Caffee MW et al (1990) Measurements of helium in electrolyzed palladium. Fusion Technol. 18:659
Mosier-Boss PA, Szpak S et al (2008) Detection of energetic particles and neutrons emitted during Pd/D codeposition. ACS Symposium Series 998, Low-Energy Nuclear Reactions Sourcebook. Marwan J and Krivit SB, Washington, DC, American Chemical Society:311
Mosier-Boss, PA, Dae JY et al (2010) Comparison of Pd/D co-deposition and DT neutron generated triple tracks observed in CR-39 detectors. Eur. Phys. J. Appl. Phys. 51: 20901
Narita S, Yamada H et al (2005) Discharge experiment using Pd/CaO/Pd mulit-layered cathode. Condensed Matter Nuclear Science, ICCF-12, Yokohama, Japan, World Scientific
Notoya R (1994) Alkali-hydrogen cold fusion accompanied by tritium production on nickel. Trans Fusion Technol. 26(#4T):205
Oriani RA and Fisher JC (2004) Nuclear reactions produced in an operating electrolytic cell. 11th International Conference on Cold Fusion, Marseilles, France, World Scientific Co
Rabinowitz M (1993) Do the laws of nature and physics agree on what is allowed and forbidden? 21st Century Sci and Technol Spring
Rambaut M (2004) Electrons clusters and magnetic monopoles. 11th International Conference on Cold Fusion, Marseilles, France, World Scientific Co
Sankaranarayanan TK, Srinivasan M et al (1996) Investigation of low-level tritium generation in Ni-H2O electrolytic cells. Fusion Technol 30:349
Savvatimova I and Dash J (2002) Emission registration on films during glow discharge experiments. The 9th International Conference on Cold Fusion, Condensed Matter Nuclear Science, Tsinghua Univ, Beijing, China, Tsinghua Univ Press
Savvatimova I, Kucherov Y et al (1994) Cathode material change after deuterium glow discharge experiments. Trans Fusion Technol 26(4T):389
Savvatimova I, Savvatimov G et al (2007) Decay in tungsten irradiated by low energy deuterium ions.

International Conference on Condensed Matter Nuclear Science , ICCF-13, Sochi, Russia, Tsiolkovsky Moscow Technical University
Schwarzchild B (2006) Search for magnetic monopoles at Tevatron sets new upper limit on their production. Physics Today July:16
Shanahan K (2005) Comments on thermal behavior of polarized Pd/D electrodes prepared by co-deposition. Thermochim Acta 428:207
Shanahan K (2006) Reply to Comment on papers by K. Shanahan that propose to explain anomalous heat generated by cold fusion
Storms E, Thermochim Acta, 2006. Thermochimica Acta 441:210
Shoulders K (2006) Projectiles from the dark side. Infinite Energy 12(70):39
Shoulders K and Shoulders S (1996) Observations on the role of charge clusters in nuclear cluster reactions. J New Energy 1(3):111
Storms E (2006) Comment on papers by K. Shanahan that propose to explain anomalous heat generated by cold fusion. Thermochim. Acta 441(2):207
Storms EK (2007) The science of low energy nuclear reaction. Singapore, World Scientific
Storms EK and Scanlan B (2007) Radiation produced by glow discharge in deuterium. 8th International Workshop on Anomalies in Hydrogen / Deuterium Loaded Metals 2007, Catania, Sicily, http://www.iscmns.org/catania07/index.htm
The International Society for Condensed Matter Science
Storms EK and Scanlan B (2010) What is real about cold fusion and what explanations are plausible? AIP Symposium Series J Marwan, Am Inst of Phys
Stringham R (2003) Cavitation and fusion. Tenth International Conference on Cold Fusion, Cambridge, MA, World Scientific Publishing Co
Swartz MR and Verner G (2003) Excess heat from low-electrical conducting heavy water spiral-wound Pd/D_2O/Pt and Pd/D_2O-$PdCl_2$/Pt devices. Tenth International Conference on Cold Fusion, Cambridge, MA, World Scientific Publishing Co
Szpak S, Mosier-Boss PA et al. (2009). Further evidence of nuclear reactions in the Pd/D lattice: emission of charged articles Naturwiss
Takahashi et al. (2005) In-situ accelerator analysis of palladium complex under deuterium permeation, Condensed Matter Nuclear Science, ICCF-12, Yokohama, Japan, World Scientific
Takahashi A and Yabuuchi N (2008) Study on 4D/tetrahedral symmetric condensate condensation motion by non-linear Langevin equation. ACS Symposium Series 998, Low-Energy Nuclear Reactions Sourcebook. Marwan J and. Krivit SB Washington, DC, American Chemical Society:57
Thompkins P and Byrd C (1993) The secret life of plants. New York, Penguin Books
Toimela T (2007) Multiple resonance scattering. 8th International Workshop on Anomalies in Hydrogen/Deuterium Loaded Metals, Catania, Sicily, Italy, The International Society for Condensed Matter Science
Violante V, Sarto F et al (2008) Material science on Pd-D system to study the occurrence of excess power. 14th International Conference on Condensed Matter Nuclear Science, Washington, DC, www.LENR.org
Wan J and Holmlid L (2002) Rydberg Matter clusters of hydrogen $(H_2)N$ with well-defined kinetic energy release observed by neutral time-of-flight. Chem Phys 277:201
Widom A and Larsen L (2006) Ultra low momentum neutron catalyzed nuclear reactions on metallic hydride surfaces. Eur Phys J C46:107
Will F (1997) Hydrogen + oxygen recombination and related heat generation in undivided electrolysis cells. J Electroanal Chem 426:177
Wilson RH, Bray JW et al (1992) Analysis of experiments on the calorimetry of LiOD-D_2O electrochemical cells. J Electroanal Chem 332:1
Wolf KL, Packham NJC et al (1990) Neutron emission and the tritium content associated with deuterium-loaded palladium and titanium metals. J Fusion Energy 9(2):105
Yuki H, Satoh T et al (1997) D + D reaction in metal at bombarding energies below 5 keV. J Phys G: Nucl Part Phys (23):1459-1464
Zhang QF, Gou QQ et al (1992) The detection of 4-He in Ti-cathode on cold fusion. Third International Conference on Cold Fusion, "Frontiers of Cold Fusion", Nagoya Japan,