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*pro se*

**IN THE UNITED STATES DISTRICT COURT**

**DISTRICT OF HAWAII**

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LUIS SANCHO, et al.,	)	Civil No. CV08-00136 HG
	)	
Plaintiffs,	)	<b>AFFIDAVIT OF LUIS</b>
	)	<b>SANCHO IN SUPPORT OF</b>
vs.	)	<b>OPPOSITION TO “COMBINED</b>
	)	<b>MOTION TO DISMISS AND</b>
US DEPARTMENT OF ENERGY,	)	<b>FOR SUMMARY JUDGMENT”</b>
et al.,	)	
	)	Date: Sept. 2, 2008
Defendants.	)	Time: 10:00 A.M.
_____	)	Court: Hon. Helen Gillmor

AFFIDAVIT OF LUIS SANCHO IN SUPPORT OF OPPOSITION TO  
“COMBINED MOTION TO DISMISS AND FOR SUMMARY JUDGMENT

I, Luis Sancho, after first being duly sworn, affirm, state and declare under penalty of perjury of the laws of the State of Hawaii as follows:

1. I have read the LSAG risk assessment provided by CERN in defense of the Large Hadron Collider [LHC] and found the safety report to be an inadequate report, *written by people related to the experiment*, which does not address the *major scientific risk and ethical crime poised* by the LHC - *the creation of a 'mass bomb'*, ( $M=E/c^2$ ), made of quarks, which could cause the genocide of all forms of life in this planet.

Since CERN has not done a proper report on the nature of the LHC, a quark factory, and I assume this court might need further information on mass-bombs and the risks poised by the LHC, I will write a brief, 'non-speculative report' that considers the 4 main points of our defense against the LHC:

- The inadequacy of the LSAG authors, as being related to the case.
- The nature of mass bombs and why the LHC, which is a mass/quark factory (EXHIBIT A, showing LHC's quark production) will make them.
- The fact that the question the LHC pretends to resolve (the meaning of mass) has been resolved, following Einstein's Relativity principles. Thus the LHC is an obsolete, dangerous experiment and CERN funded with

billions of taxpayer's money that can be better employed in alternative, safer research instruments, such as telescopes.

- The inadequacy of the report, which studies events unrelated to the case judged here - the effects of a mass/quark bomb for life on Earth.

2. The evidence against the independence of the authors of the LSAG report is clear: the report (Note 1) was conducted by physicists, funded and commissioned by the LHC principal, CERN, which is headed by a physicist, and reviewed by CERN's Council Scientific Policy Committee, also composed only of physicists. Concerning participants, a "plurality of expertise", including ethicists and safety experts, is called for by the EC (Note 2). Yet of the people involved in the LSAG process (preparation and review of documents) – all 26 were physicists (EXHIBIT B).

This physicists-only advice was then put to the CERN Council for consideration and advice to governments. The CERN Council represents the 20 governments funding the LHC. The Council therefore itself has a vested interest, and so it is not at arms-length from the project, and may itself feel a bias to justify its prior decisions of support.

Given this state of affairs, thoughtful people are uneasy because of reference to a basic sense of fairness. This is embodied in one of the rules

of natural justice or procedural fairness: the rule against bias (*nemo debet esse iudex in propria sua cause* – "no one is to be a judge in his own cause")

A further rule of natural justice is that proceedings should be conducted so they are fair to all the parties - expressed in the latin maxim *audi alteram partem*: "let the other side be heard".

This latter element of natural justice is in essence what this suit is asking for, given the high stakes of the risks involved – namely the extinction of all forms of life in this planet.

3. The creation of a Mass-Bomb,  $M=E/c^2$ , at the LHC is extremely likely, since the LHC is basically a quark factory (EXHIBIT A), whose main purpose is to create mass, 'massing' together quarks; in essence, the mechanism that creates mass-bombs in the Universe. According to today's standard science (which is Einstein's Relativity Theory in all themes concerned with mass), the previous equation,  $M=E/c^2$ , explains how a mass-bomb of heavy quarks, which holds 99% of the mass of the Universe (M), suck in and glue light matter (our matter, E), at light speed ( $c^2$ ), causing a Nova or Supernova explosion that could convert Earth into an ultra-dense, massive object – either a small neutron star or a black hole.

The Equation of Mass-bombs was published by Einstein in his 'miraculous year' 1905 under the title "Does the inertial mass of a body depend on its energy content?" The original paper by Einstein (4) was entirely dedicated to the creation of Mass according to that equation,  $M=E/c^2$ . *While  $E=Mc^2$  was deduced from the original equation of a mass-bomb and became more popular only after Hiroshima showed both equations to be truth – since if  $M=E/c^2$  were false, given the fact that thus, Einstein deduced  $E=Mc^2$  from it, there would have not been atomic bombs. Mass-bombs happen all the time in the Universe, in all its scales. Since processes that create matter from energy,  $M=E/c^2$ , probably account for half of the phenomena taking place in the real cosmos, balancing the inverse entropy arrow that creates energy from matter and writes inversely,  $E=M/c^2$ .*

Since it is a tenet of modern science that the Universe is made of energy and information in all its scales and species, those 2 equations together explain the 2 arrows of energy and information that create also the physical world:  $M=E/c^2$  represents the arrow of creation of physical information or mass in the Universe, which is caused by gravitational and strong forces. Those forces balance the arrow of entropy, of electro-weak forces,

that expand the Universe back into energy ( $E=Mc^2$ ). Thus, if mass-bombs were not all pervading in the cosmos, the Universe would die and for that reason mass-bombs happen in all scales:

In the smaller scale of stars and planets, mass-bombs create black holes, exploding the wasted-energy of the star or planet in a nova.

Finally, in the quantum scale, in which the LHC will start its experiments, Mass-bombs catalyze the absorption of our electronic world by quarks.

4. We know black holes and strange/neutron stars (stars with a nuclei made of quarks and a thin outer layer made of neutrons and iron), all collapse under Einstein's equation in the cosmological scale, due to gravitation; but the details of that collapse were unknown until recent years.

Yet recent work done on the field of the strong force (EXHIBIT 'E') helped us to understand also in quantum terms the previous equation, caused by the Strong force that converts energy into quarks, *as the LHC intends to do*. Quarks use the '*Strong force*', 100 times stronger than our electro'weak' force, to destroy the 'weak' barrier that repels particles with their charge, making our 'light world' wider in spatial energy but empty of informative mass. Yet since the *Strong Force* is 100 times stronger than any

*Charge*, a mere 1/100th part of the quarks' strong force is enough to eliminate the electroweak barrier and collapse our electronic energy into dark, quark matter.

In literary terms, we could consider such duality of forces in the Universe akin to the 2 forces described by Genesis in the Myth of Creation: 'And God said there is light, and he parted the day from the darkness'. CERN might just do the opposite: convert our light world back into darkness. Indeed, we know today that the dark, strong world of massive quarks kills and feeds on our light world. Since death is an overdrive of energy that simplifies, extinguishes the information of life, in the quantum world the death of the electromagnetic world happens when the strong force used by quarks overcomes the 1 Terabyte rank of energy – the limit of energy our world can endure. Which is precisely the energy barrier the LHC will cross to explore the world of Strong Forces and dark matter, made, according to the Standard Model, of lumps of ultra-heavy quarks.

*Yet the LHC, commissioned to explore that quark world beyond our light matter, will reach up to 7 terabytes of potency, well within the intensity range of strong forces and quark masses needed to create a Mass-bomb according to today's standard science, as EXHIBIT 'A' shows.*

*The intensity of energy needed to create a mass-bomb is signaled in EXHIBIT 'A' with a red line – the so called MIT bag of stability of deconfined quarks – beyond which a mass bomb of deconfined quarks become stable. EXHIBIT 'A', which the LSAG does not even mention, shows the real production of mass at the LHC.*

5. We have also obtained recent theoretical and experimental evidence that the creation of a mass-bomb is far easier than previously believed. Experiments made at Brookhaven's RHIC showed that a few thousand strange quarks massed together form an attractive super fluid, similar to a proto-black hole that lives billions of times longer than expected as it accretes much more mass than previously believed (EXHIBIT 'C'). In a visual analogy, at RHIC we have seen the 'embryo' of the Tyrannosaur Rex of the Galaxy – the Mass-bomb - that should become fully grown with the Terabyte energies it will have at the LHC.

This Court should take notice that before the experiments at RHIC took place all physicists predicted that those quarks would evaporate instantly into a hot plasma. Nobody predicted the outcome of the experiment and the results became, in words of the scientific community, a "perfect surprise" (SciAm, RHIC bulletin, EXHIBIT C). Such liquid was

called a 'perfect' 'strange' 'superfluid', due to its extraordinary properties. Indeed, strange quarks were called 'strange' because its long life surprised their discoverers. While the quark liquid found at RHIC was ultra-ordered with no viscosity, a perfect form of matter. Yet CERN has not accepted those results and still 'predicts' that it will create a "quark-gluon plasma", a gas, not a vortex of attractive, superfluid strong quarks, similar to the space-time whirls predicted by Einstein.

The scientific community however has been exploring further those experiments. Thus, after the "perfect surprise" many papers on the subject have been published by the biggest world authorities in the strong force that glues those quarks together, with work at MIT (Massachusetts Institute of Technology) and at the National Nuclear Research Center in China. Those papers (Exhibit 'E'), show that 10,000 quarks are able to form a nova or mass bomb. CERN however has ignored all those papers, warnings and experimental proofs, as it will produce more than a 1 million deconfined quarks per second and hence the LHC potentially will produce enough quarks to detonate 100 planets. (Exhibit 'D': CERN's report on the real production of particles at LHC).

The reason why so few quarks are needed to create a mass bomb is because previously we believed quarks changed their 'color', a property that caused its instability. And so to counteract that color effect the strong force between quarks had to be made stronger by increasing the number of quarks (represented in the graphs of Exhibit 'D' by the number  $A=10^x$  quarks). Yet we have discovered that quarks actually 'lock' their color, becoming more stable; so we need very few quarks to detonate a mass-bomb. As the graph of Exhibit 'D' shows the numbers of quarks needed to make a mass-bomb have plummeted, from earlier estimates at the time the LHC was commissioned of several millions, to a few thousands today.

For that reason today a mass of deconfined quarks is called in standard physics, a color-locked strangelet (strange quark liquid). In popular culture it is called "ice-9", a term coined by Frank Wilczek, also present in this suit, which warned with Dr. Wagner of those dangers in Letters to *Scientific American*. The answer of CERN to that letter was given by its director: 'Wilczek is an order of magnitude more intelligent than I am, but he has been naïve. We have asked people working at CERN to state zero risk regardless of personal position'. (Note 3) It seems that what Mr. Engelen meant is that to warn mankind of a danger of extinction is

naïve, since it also endangers a budget of 13 billion dollars. Mr. Wilczek also previously recognized publicly (6) that ‘nature is so malicious’ that ‘a catastrophe might happen’, and it is ‘certain’ that black holes might be produced at the LHC.

The second reason why a mass-bomb is so easy to produce with so little quantity of ice-9 is self-evident. Since mass-bombs are the inverse of an atomic bomb,  $E=Mc^2$ , its combustible fuel is outside the bomb – it is the mass of this planet itself or any celestial body. Thus, unlike A-bombs that need the combustible fuel inside the bomb, the only thing needed to create a mass-bomb is the detonator, ‘ice-9’ *as the combustible fuel itself is the entire mass of the Earth.*

6. It is today understood that an “ice-9” reaction is a standard reaction that occurs everywhere in the Universe; as it is *the only reaction known* to produce quark stars and the strangelet superfluid liquid we believe exists in the center of all neutron stars. Thus it can easily happen if we produce “ice-9” here on Earth. Because Mass-bombs are so common, the dark world of gravitational, strong forces can be explored also with telescopes and satellites, which already observe mass-bombs happening

everywhere in the Universe, in neutron/quark stars, supernovas, black holes and quasars (galactic mass-bombs).

Recently the American Government has built 2 such satellites [AMS-2 and the GLAST], one of which was launched [the GLAST] and which will soon bring safe information about mass-bombs (baby-black holes and frozen stars of all kinds), making the LHC experiment redundant.

We instead hope that this court will consider a Preliminary Injunction imposed on the LHC, until the results of those observational satellites prove that strangelets and black holes do not pose any risk for the Earth.

Since to make mass-bombs in this planet, with the excuse of knowledge, is extremely dangerous, regardless of the interest some scientists might have in the subject, and the huge profits the industry of accelerators might obtain constructing ever more powerful machines.

7. CERN is an industry that needs scientific reasons to obtain funding for a machine, which is basically a nuclear cannon, extremely dangerous for mankind, and an obsolete tool of research that will not find the secrets of the Universe - since the nature of mass and black holes, which the LHC pretends to explore, is perfectly explained within the framework of Einstein's Relativity, today considered standard science.

Yet instead of accepting those facts, CERN justifies the need for the LHC to test alternative theories on black holes and mass that pretend to substitute the accurate, well-proved models of masses as vortices of space-time developed by Dr. Einstein and his followers (5).

There are physicists, such as Mr. Hawking and Mr. Higgs, which deny Einstein's equation,  $M=E/c^2$ ; that is, the existence of an arrow of 'gravitational information' that implodes the Universe and balances its entropy, creating highly ordered quark vortices, as those observed at RHIC, which act as attractive whirls of space-time, bending energy into cyclical Mass. But those physicists, and their theories despite so much media hype, are not considered standard science, but speculative theories without proof that, unlike the well-proved work of Dr. Einstein, should not be upheld as standard science in this court.

On one hand, Mr. Hawking speculates that Black Holes instead of sucking in matter, have 'Entropy' and evaporate mass [via so-called "*Hawking Radiation*"], inverting the arrow of Information of the Universe that disappears. As a result of this Mr. Hawking affirms that black holes might act as Time Travel Machines ("The Universe in a nutshell"). This implies that black holes would destroy information (Information paradox) and break

the balance between entropy and information that makes reality eternal.

Yet if the Universe dies then what it becomes eternal is its dead state and chances the Universe exists 'now alive' as it does, are almost zero, compared to that eternity of death in which we should exist 'now'. In other words the probability Mr. Hawking's theory is right is almost null. And that is why there has never been experimental evidence of time travel machines and evaporating black holes.

The arrow of Entropy and the arrow of Einstein,  $M=E/c^2$ , that restores entropy, co-exist together. And they will always exist despite the desire of some physicists to reinvent the Universe and its well-proved laws. In that regard, Quantum Physicists that deny the arrow of information are considered by philosophers of science that study both arrows, 'reductionist' scientists, also called "naïve realists" because they only 'see' expansive space, energy, which they call Entropy. They deny the arrow of information that reproduces constantly fractal forms with movement, called 'life forms' studied in biology and complexity and produces mass in the realm of Relativity Theory. Yet 'reductionist' theories about black holes and masses have never been proved and should not be considered standard science in this court.

Mr. Higgs' particle belongs to that kind of reductionist theories. Since he affirms that masses are not gravitational whirls that curve and attract space, as Einstein proved, but a quantum, energetic phenomena caused by his 'never-found' particle that communicates mass to all others by colliding with them (Note 5).

Mr. Wilczek, who has filed as *Amicus Curiae* on the side of the defendants, has himself acknowledged in public speeches (Note 6) that only Einstein's work on Mass-bombs and his work on the Strong force accounts for the meaning and value of the masses of quarks, contrary to the position he purportedly now takes as an alleged *amici*.

8. CERN is not advancing our understanding of the Universe. On the contrary, by sponsoring such bizarre theories, CERN is not only risking mankind, (since if Einstein is right we will become a black hole) but also delaying the understanding of standard mass theory and wasting resources needed to observe those processes in the Universe at large with safe telescopes and satellites.

As a philosopher of science I have 3 tasks, to find unifying theories of reality, to falsify those which are not true theories, as the aforementioned, and to denounce in bio-ethic terms science when it harms mankind.

Because both arrows obviously exist in the Universe, the philosopher of science, the 'judge' of science downgrades physics which studies only entropy, to a secondary role, despite its economical/military/industrial power, in which physics has the undisputable crown.

Philosophers of science today lean towards Complexity, Fractal Theory and System Sciences that explain the Universe with both arrows, and they value more the science of Biology that explains the arrows in mankind, stressing the arrow of information, over the arrow of Energy, studied by physicists. This should be obvious as one considers more important to understand both arrows in your self, your energetic body and informative head, but if you were to choose you would prefer your informative head.

We exist in an eternal, balanced universe of energy/entropy and information that accumulates with the passing of time (time curves space in words of Einstein), creating the information of life and the process of 'aging', when biological species accumulate an excess of information.

Such simple balance between spatial energy and temporal information,  $E \times T_i = K$ , was expressed mathematically by Dr. Einstein, but it has always been known to mankind, which expressed it in Eastern

Philosophy and western medicine with the duality of yin/information and yang/energy, the concept of a golden mean in Buddhism and the vital balances of traditional medicine (*'mens sana in corpore sanum'*). It is also the fundamental tenet of the Sciences of Systems and Complexity, today at the head of research in complex theories that define precisely all the species of the Universe as entities made of flows of energy and information, the 2 arrows that create the future. Thus, in the same way life is made of heads of information that perceive and bodies of energy that move, the physical world is made of particles that knot moving forces into gravitational information,  $M=E/c^2$ , and Fields of Energy that unknot particles and charges.

In simple terms, the search for extreme energies will reveal nothing new and can bring death, whose complex equation is defined precisely in terms of energy:  $\text{Max. } E \times \text{Min. } T_i = K$ . Indeed, in a field of space-time, of energy and information, life is an arrow that maximizes information as it warps, fractalizes and reproduces its form in energy:  $\text{Life: } \text{max. } T_i \times \text{min. } E = K$ ; Death is the inverse equation:  $\text{Max. } E \times \text{Min. } T_i = K$ , The entity loses all the information of its spacetime field and expands, explodes, men into cells, or burnt into atoms, now even those atoms can explode in a Nova.

Because this is a suit that needs to translate verbal, ethic terms into mathematical equations and vice versa I bring the previous equation of complexity to this court to stress the limits of physics as a science and the ultimate fate of a misguided industry of death.

9. In that sense, the LSAG report produced by CERN is just another element in a ceremony of confusion that tries to hide the risks and pumps up the benefits of the LHC, to obtain its billionaire funding.

Thus, instead of discussing what physicists will do to prevent the formation of a mass-bomb at the LHC – which let us remember is just a mass factory that lumps quarks together (Exhibit 'A', 'D') - the 'safety report' is dedicated to speculate about events happening in far away neutron stars or to study the effects on the moon of cosmic rays, which have nothing to do with the LHC, since cosmic rays are light particles different from the heavy quarks the LHC will use in its experiments.

The reasons why the LSAG is a report on neutron stars and cosmic rays, which have nothing to do with the case judged here is obvious: CERN cannot say the truth about Novas and mass bombs, as the risks are immense both in probability (standard science today shows that the LHC *has enough energy to create 100 mass bombs per second*), and in

causalities (standard science shows that all mankind will die if a mass bomb is formed). Thus, CERN doesn't discuss the standard processes that create Mass-bombs in its Risk Assessment on the LHC, because CERN is fully aware that if Humanity knew how fundamental and common Mass-bombs are in the Universe, the high Risk of Genocide they pose would provoke a justified public alarm on its activities. So CERN ignores Einstein's work and those of the American Physicists that followed him, which essentially have resolved the meaning of mass in all its details during the past decades, to avoid facing those risks and the subsequent shutdown of a factory of extremely dangerous substances that should never operate.

CERN is a big company with a huge budget that has engaged in those experiments half of the nuclear physicists of the world. Thus, even if the LHC poses an enormous risk for mankind, not to perform the experiment implies an enormous risk for CERN. Namely, if people knew what a mass-bomb is and how easy it is to construct them, CERN would have to shut down. Thus, in the choice between the survival of the humankind and the survival of CERN, CERN has selfishly chosen to survive and put mankind at risk, defaulting in this suit and denying the very

same purpose of the LHC; which is to create mass from energy (and hence potentially to detonate a mass-bomb here on Earth).

So CERN tries to confuse and misguide mankind with a report that ignores the nature of the LHC – a quark/mass factory – and the last experimental and theoretical advances on deconfined Quark liquid (EXHIBIT ‘A’, ‘C’, ‘E’) - which shows that a mass of 10,000 deconfined quarks are enough to create a mass-bomb [“ice-9” trigger] and cause the most lethal types of explosions of the Universe, novas and supernovas. CERN will produce over 1 million deconfined quarks per second, according to its own reports (EXHIBIT D). It is thus obvious that if the LSAG was a report that addressed the real dangers that a quark/mass factory poses to mankind, the European Union would not risk converting the Earth into a Nova and the quark factory would be shut down. Thus, instead CERN chooses false analogies (cosmic rays *are not* mass bombs), and displaces the problem from the Earth into far away neutron stars.

Such omissions convert the LSAG report into a mockery of what a serious, responsible safety report should do: to explain what the LHC will produce – masses of quarks glued by the strong force – and what such quark masses do in the real universe – start nova reactions that convert

the light matter of which we are made into strong/dark/quark matter, creating neutron/quark stars and black holes.

Mass-bombs do exist and are far easier to create than previously believed (EXHIBIT 'E'), because lighter Masses are their combustible fuel. Thus, we only need to make a big lump of quarks to detonate a mass bomb. Which is precisely what we fear the LHC will do: create a detonator 'bag' of quarks, that would start to create mass of enormous density with the combustible fuel being the Earth itself. The value of the 'standard bag' of quarks, or "ice-9", that scientists consider can start a mass-bomb is called the MIT bag (as it is used by MIT researchers) and recent papers show to be around 10,000 quarks, 100 times less than the number of heavy quarks the LHC will produce every second (EXHIBIT 'D'). To prevent this from happening we have filed this suit and we want CERN to inform this court and discuss mass-bombs openly with equations and numbers, which they don't do in their report.

10. In the few paragraphs the report addresses the issue of a mass-bomb with some pretension of scientific information, the information it provides is inaccurate and misleading.

The main mention of those mass-bombs happens in a short paragraph dedicated to the creation of strangelets, where the LSAG misrepresents the Physics involved in the process. Two known facts suffice to prove what seems to be a routine in the acting modes of CERN - lying to the press and this court in the belief that the press and this court are not specialists in Physics, and will naively believe them:

- CERN states that even if RHIC was on the verge of producing strangelets with **10 times less energy** than the LHC, the LHC with higher energies has less probability to produce strangelets. This is a self-evident mathematical inconsistency (7). Since mass and energy are the same ( $E=mc^2$ ). Thus, the more energy we 'mass together' on those collisions, the more quantity of strange quarks we produce. *The entire purpose of the LHC is precisely to produce more massive quarks and that is why it is using levels of energy unknown to this planet, to transform its energy into mass, following Einstein's equation.*

Thus, as we increase the energy of the accelerator, the mass of the strangelet increases and certainly the LHC will produce quantities of "ice-9" well beyond the threshold needed to produce a mass-bomb or Nova.

- CERN also states that strangelets are not negative. And it affirms that only negative strangelets create mass-bombs.

Yet 'strange quarks' are, like electrons, negatively charged [with  $1/3^{\text{rd}}$  the charge of an electron]. *It is a fundamental, unchangeable property of the strange quark.* This is equivalent to saying that a flow of electrons is NOT negative. A flow of Strangelets is by definition negative and the more strange quarks the LHC will produce the more negative the mass-bomb will potentially become.

Further on, all strangelets are by definition, regardless of charge, potential mass-bombs. The charge doesn't matter, *since strangelets do not attract atoms with charge but with the strong force, a totally different type of force, 100 times stronger than the electroweak force of charges* (hence those self-evident names). In other words both, negative and positive strangelets will have 100 times more force than charged particles and will attract them.

Negative strangelets will attract also positive charges (ions) and positive strangelets entire atoms (with a negative, electronic cover), as we observe experimentally in Novas that feed on both type of atoms, creating vortices of mass at light speed ( $M=\pm E/c^2$ )

Regarding the chances of creation of black holes at the LHC, the report considers those events speculative scenarios. However since physicists believe the mechanisms that create black holes and neutron stars are the same, according to Einstein's work, black holes can be created also through the implosive  $M=E/c^2$  arrow.

Moreover, Einstein called black holes 'frozen stars' as he believed we would find an ultra-dense cold substance to form them. And indeed, it is very likely that in the quantum world black holes can be created by a self-similar process to the ice-9 process aforementioned in which heavy strange quarks absorb our matter. We just need the heaviest quarks of the Universe to do the same. They are called top quarks. Thus a deconfined state of top quarks very likely will create the fastest, strongest mass field/vortex of the Universe.

Since CERN will produce several of 'those' per second (Exhibit D), the creation of a black hole at CERN is no longer speculation, *at any mathematical level of detail we want to implement it, either using  $M=E/c^2$  as it was first detected, or changing the strength of the gravitational field that becomes a strong field as many others proposed. Yet in practical terms, it might require only to create 'gas-9' a top quark-gluon vortex of top*

matter, indeed the top predator 'form' of the Universe. Yet if the theoretical 'gas-9' is a substance of deconfined top quarks, as we believe (Note 8) CERN will provide them also in vast numbers (EXHIBIT 'D' ). *Thus the LHC won't resolve the meaning of the Universe but it can implement the final arrow/equation of death, of pure entropy: Max.(Physical) Energy x Min. (Life) Information; to the entire planet.*

11. This misconduct must be evaluated on account of the previous internal memorandum handled by the Chief of CERN to his employees, demanding silence regardless of personal opinions. It is indeed, for that reason that we have sued CERN for potential genocide, as a 'company that produces lethal substances' and misinforms about them and the CATASTROPHIC ENVIRONMENTAL CRIME they can provoke. We have not sued any of the individuals working there; nor are we pursuing a scientific argument when so evident truths as those mentioned before are systematically denied by the Company of Nuclear Research and its associates and workers under contract.

Indeed, we recommend this court to ignore the LSAG in its present form and demand from CERN for a new, responsible report that truly addresses the question judged in this case, the chances of creating a

mass-bomb on Earth - to see if they can prove wrong the scientific articles that recently have shown the high probability of the creation of a mass-bomb with the LHC's range of energies.

12. Unfortunately those risks have been known only recently (2004, EXHIBIT 'E'), when the LHC had already been budgeted and its construction handed to the leading technological industries of this planet. Thus, the economical interests created around the LHC machine and a record of denial by nuclear physicists of any errors or misconduct when they cause massive death among human beings, explains why the LSAG and CERN are and will continue to deny those risks, 'hoping' more than expecting that nothing bad will happen. This is nothing new. The father of the atomic bomb, Enrico Fermi gaily made a bet when the first A-bomb exploded, hoping that it would only blow up New Mexico and not the Earth.

CERN was awarded full diplomatic immunity. So it cannot be sued in European courts. This explains why its behavior follows that pattern of irresponsibility set by the Nuclear scientists of the cold era. While such impunity could be justified at the time to protect this country, given the political circumstances of the cold war, today we live in a multi-polar world which prefers diplomatic solutions to its problems and seeks to defend itself

from all forms of terrorism – that is against all acts that can produce massive deaths among the human population, regardless of the fundamentalist, religious or scientific ideology that sponsors them.

Thus, I ask the American Justice System to set an example for the world at large to end once and for all an obsolete, expensive, dangerous industry that has long ago completed its task of discovering all the quark particles of the Universe, perfectly known to present science and hence it has no longer any scientific use, ending with the impunity in the face of justice, for mass murder some ‘fundamentalist nuclear physicists’ have enjoyed in the past, as it is rightly doing with its laws against self-similar acts of mass-murder carried about by fundamentalist religious groups. No factory on Earth ‘deserves’ diplomatic immunity. When that factory is researching the most lethal substances of the Universe, such accountability must be brought upon justice before a catastrophe might happen.

13. CERN is an agency of the Cold War era, used also to research high energy particles by smashing them together as nuclear bombs do, but today it has no longer any scientific utility since all the fundamental particles of the Standard Model have been found, nor does it have any military use since a Mass-bomb will detonate the entire planet, leaving no

winner in a war. Yet industries are self-sustained and once they are created, they keep doing machines bigger and more powerful regardless of their use or danger to mankind, advertising and selling them with the most sophisticated excuses – in this case the Top=Higgs particle. Thus, in the same manner nobody needs a car going at 200 miles per hour, as it would break all the driving laws of this country, yet companies keep researching and selling faster cars, ever more lethal to imprudent drivers, thanks to the use of advertising hype.

Likewise, nobody needs a bigger atomic gun (an accelerator in layman terms) and yet atomic guns keep getting bigger. Now at CERN those atomic guns are poised to cross a barrier of energy this planet cannot stand, to study mass-bombs that can be perfectly observed with harmless telescopes all around the Universe. They are falsely advertised as the solution to understand the Universe – when they just probe ever more dangerous levels of explosive energy, the arrow of entropy and death in which Physical research specializes, and those who promote CERN's experiments seem to believe 'the essence' of the Universe. Let us recall that Alfred Nobel was known also as 'Dr. Death', given the fact that he was the biggest arm manufacturer of the nineteenth century.

He also said, 'Peace? My factories will end all wars, manufacturing a weapon that can destroy a nation with a shot'. Upon insistence of his lover, he finally included a Nobel Prize for Peace in his grant, but not a single Nobel Peace Prize winner is defending CERN or has reported in the LSAG or to this Court. The arrow of information and life however must reaffirm itself and truth must prevail both in the scientific and ethical dispute brought upon this court.

14. For all those reasons if CERN persists in its disrespect for this Court, as it has done by defaulting, and preparing a false report safety report, unrelated to this case, I recommend an immediate Preliminary Injunction to prevent the American Government from further involvement in a potential act of genocide, which goes against all the beliefs cherished by the American people with its proverbial respect for human life, written down in its fundamental Laws.

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Further, affiant sayeth naught.

Dated: August 20, 2008

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Luis Sancho

## NOTES

1. LHC Safety Assessment Group (Ellis J, Giudice G, Mangano ML, Tkachev I, Wiedemann U) (2008). "Review of the Safety of LHC Collisions"
2. European Commission. Communication from the commission on the collection and use of expertise by the Commission: Principles and Guidelines: "Improving the knowledge base for better policies (2002).
3. Reported in The New Yorker. Mr. Engelen also said to BBC news, 4 feb. 2005: 'Whatever the discoveries ahead for physicists working at the LHC, the experiments will', according to its chief scientific officer, Jos Engelen, "keep physicists off street corners for a long time to come". Yet the risk for humanity that a factory of this type implies makes those considerations of secondary importance.
4. Einstein's original article was published in "Annalen der Physik", September 1905.
5. The Higgs idea that a quantum particle attracts poses a fundamental contradiction: collisions repel particles with the same force and so nobody has explained how the Higgs particle, if real could attract particles and attract each one with different force. This goes to the extend that the present explanation was found by a student in a concourse to promote the particle: it suppose to act as a celebrity does. People know he is coming and so wait and crush him upon arrival. So according to such mechanism now particles are sentient and foresee the future... Such nonsense, has made Mr. Weinberg Nobel prize for the discovery of the electroweak barrier, co-shared with Amici Curia Mr. Sheldon, call the Higgs Particle, a 'toilet particle' that should be drawn down the sink (of those gravitational vortices, described by Einstein that it pretends to substitute). We wonder if Mr. Sheldon shares his opinion. On the other hand, Einstein mechanism is self-evident and simple. Masses are whirls of Space-time in 4 dimensions, that act as the conventional bidimensional hurricane. The equation  $U.C. \times M = w^2 \times r^3$ , explains Einstein's concept of a mass or a charge as a vortex of space-time of 2 different scales - the microcosmic size of charges,  $UC=q$ , and the cosmos given by the Universal constant G. If we use the same concept in the middle cosmos of man, any of those vortices is self-similar to a hurricane that attracts more when the vortex turns faster and the volume is bigger. In the equation of Einstein, the faster the rotational speed,  $w^2$ , is the stronger the mass, till the limit of a black hole, the fastest rotational object of the Universe at c speed, which *is the speed the LHC will try to reach converting slower masses into attractive black holes.* *Vortex of space-time is the phenomena physicists formalize with Universal constants that measure the space size and time speed of the vortex.* Einstein laid down all the principles of those vortices. Brans-Dicke found in the 50s that variable Universal Constants could accommodate different masses, in the 90s Franz Wilczek, which also participates in this suit completed his work calculating all the masses of quarks comparing them with the frequencies of those mass vortices, 'disturbances of space-time' (Wilczek). Since the use of frequencies to measure charges and masses unify all those different space-times, a fact easy to prove mathematically for the amateur physicist in this court or audience by the substitution in the previous equation of the earth-sun radius that gives the value of the mass constant, G, and the substitution for the Bohr radius that gives the value of the electric constant, today Mass Theorists considered Einstein proved right and Higgs and Hawking wrong... , Thus, all this results and many more of advanced Mass Theory have rendered the LHC utility for knowledge null compared to the weight of its dangers.
6. 'The Universe is a strange Place', MIT conferences.
7. Ultimately in matters of science this court should be aware of the limits of mathematics and its self-contradiction as a language. As there are hierarchies in verbal descriptions of nature, so we are first life

then humans then nationals and to be a Spaniard is less important than to be human less important than being alive, mathematical phenomena have degrees of complex explanation. Mass bombs do exist because they are defined as such in the final deeper level of reality. They are the arrow of physical information and the Universe would not exist without them. Mass bombs are formed by quarks because it is the only proved particle that can form them. Since they need the amazing speeds and forces of the strong force to exist. Finally strangelets which are the easier mass bomb to create are negative and so highly active not only as strong whirls of heavy space-time but as weak whirls of light space-time, attracting positive charged atomic nuclei. The 4<sup>th</sup> level of abstraction are the speculative, fine-tuned equations that CERN shows in some papers to prove all those deep, many-times proved essential levels that tell us mass bombs exist, quarks make mass bombs, and strange quarks make ice-9 reactions that detonate mass bombs.

8. In that regard, in the same way there are 2 type of Atomic bombs, a fission bomb of lesser potency and a Hydrogen bomb, much more powerful and difficult to reach, as it requires much more energy to explode, there are 2 types of mass-bombs, strangelets and black holes. And again Strangelets are much easier to produce, as we have seen before, since they require far less energy than black holes. So we can assume that if CERN expects to create black holes, it will certainly create strangelets that need far less mass.

Strangelet production is today a well known reaction that would convert this planet in a quark star while black hole production has not yet been observed and so it is of a more speculative nature, hence the report prefers to analyze black hole production instead of the very likely creation of a Nova and a quark star here on earth.

Yet by homology (not analogy), again in recent years we have come to understand what could be the most likely scenario for production of black holes, in a self-similar manner to the way quark stars are created, *without the need for extra-dimensions as the LSAG insists*. Since this is a matter of importance to this case, I would like to elaborate those processes in simple scientific terms, with the help of graph 3, attached to this report:

The graph shows the production of quarks at the LHC. The court would observe that deconfined quarks is all what the LHC will produce (apart from the hypothetical Higgs particle, latter explained in more detail), since the LHC is just a quark factory, NOT as its advertising campaigns shamelessly proclaim and some naïve journalists without the proper scientific preparation believe, the machine which will resolve the meaning of the Universe. In this graph the court will appreciate the existence of two self-similar triangles of quarks, of increasing mass that we have labeled the strange quark decuplet (name given by its discoverer Nobel prize Gell-Mann), responsible for the creation of strangelets, whereas the upper vortex of the triangle, the strange quark, given its enormous attractive power, with 100 times more mass than our quarks, attracts our quarks, breaks its electronic cover (the pion barrier) and absorbs them.

This triangle explains the ice-9 reaction, and today as it has been researched now for 40 years, is well understood. The court will notice that the triangle is totally immersed within the scale of energies that the LHC will produce. And for that reason the production of strange quarks at CERN will be immense, calculated in one million per second, as its energy goes well beyond the quantity needed to start an ice-9 reaction according to standard science, which is highlighted in the graph with a red line, the so-called MIT bag or threshold of stability of strangelets. In the graph, you can observe a blue star that was produced at RHIC. It was the quasi-stable proto-black hole, the 'big surprise' that no physicist was able to forecast then. It is below the MIT bag, that threshold of strangelets' stability and that might be the reason we are still alive.

However in the Universe there are not only the 3 original quarks that Mr. Gell-Mann discovered, but also 3 much heavier quarks found latter and produced so far in minimal quantities, due to the enormous energy that is needed to produce them according to Einstein's formula ( $M=Ec^2$ ).

This second triangle of quarks is joined by a dark line in the upper part of the graph. And it is so far the only candidate of known particles that could form the 90% of dark matter MACHOS known to exist in the Universe, and hence the only particles whose mass and physical parameters correspond to those of a black hole.

In layman terms, if the lighter triangle produces quark stars when the heaviest corner of the triangle, the strange quark attracts and absorbs the lighter quarks on the base of the triangle that form our atoms of 'light matter', we hint that a self-similar process happens with the upper triangle of 'dark matter'. The base of that upper triangle of dark matter, is self-similar to the 'ud-quarks' base of the strange triangle that creates our atoms. So we hint that those 2 quarks, called bottom and charm, will form a dark matter atom, much heavier than our light atoms, which agrees with the observed massive substance that dominates our galaxy (90% of its mass is made of dark matter).

By the same token since those 2 triangles are self-similar 'triangles of quarks', if the strange quark absorbs 'ud-quarks' quarks in an ice-9 reaction creating a nova, we believe the top quark of the dark matter triangle, called properly a 'top' (as it is the 'top predator' mass of the Universe) will, if created at CERN, deconfine the 'bc'-atom at the base of the triangle and absorb them creating a black hole.

This is in accordance with the parameters of black holes. Since in the same manner that strange quarks have the parameters needed to be 'the 'atoms' of a neutron/quark star, the top quarks have the density parameters needed to be the 'atoms' of a black hole. And since Aristotle we know that reality has both, substance and form, so black holes as Einstein always postulated need a substance that those top quarks provide.

*Thus it is not needed at all to create extra-dimensions to form a black hole; according to the standard model, the only known and proved model of particle physics, a deconfined mass of top quarks will create a black hole in a self-similar fashion to the way in which a deconfined mass of strange quarks will create a strangelet.*

As Einstein put it God is simple, not malicious. By this he meant it is efficient and economical. And it is a tenant of truth in science, that the simplest processes are the true ones (Occam's razor). Since the top matter triangle provides the simplest process to create black holes in the Universe, and explains why those top quarks exist in correspondence to its macrocosmic form (a black hole), we consider that the LHC will certainly produce ice-9, well within the range of its energy (the red matter triangle) and it might produce black holes (on the upper range of its energies). Thus there are not one but two clear probabilities that the LHC will convert the earth into a nugget of quarks.

Since the graph shows that the *fundamental substance the LHC will produce is the detonator substance of mass-bombs— the equivalent to the enriched uranium-235 of a nuclear factory.*

Whereas the strangelet is the equivalent of the Atomic bomb and the black hole the equivalent of the Hydrogen bomb which requires a more energetic substance to explode.

In this case those 2 substances are ice-9 (deconfined strange quarks) and by homology given the self-similarity of both triangles, 'gas-9', (dark, deconfined top quarks).

#### 9. <http://www.greenpeace.org/international/press/releases/greenpeace-new-study-reveals-d>

The data, based on Belarus national cancer statistics, predicts approximately 270,000 cancers and 93,000 fatal cancer cases will be caused by Chernobyl. The report also concludes that on the basis of demographic data, during last 15 years, 60,000 people have died additionally in Russia because of the Chernobyl accident, and estimates of the total death toll for Ukraine and Belarus could be another 140,000.

‘Only 56 people have died as a direct result of radiation released in Chernobyl’ according to the report ushered by UNO’s Atomic Energy Agency:  
<http://www.timesonline.co.uk/tol/news/world/europe/article563041.ece>



**EXHIBIT 'B'**

**Process for: preparation of LHC safety report documents and their review and approval; and participants**

Stage	Report / review	Report / review team	Report / review team member affiliation	Source of information on participant profession	Cumulative total of physicists without duplicates
CERN Scientific Policy Committee(SPC) examined LSAG),providing conclusions		Chairman	"...the SPC CERN Council has an advisory body, the Scientific Policy Committee, SPC. The SPC is composed of world-recognized physicists"	President of CERN Council (pers. comm.)	
		Prof. E. FERNANDEZ			
		Members:			
		Prof. R. ALEKSAN			
		Prof. J. AYSTO			
		Prof. A. BLONDEL			
		Prof. A. BONDAR			
		Prof. P. BRAUN-MUNZINGER			
		Prof. M. CAVALLI			
		Prof. P. DORNAN			
		Prof. D. FOURNIER			
		Prof. D. HARTILL			
		Prof. T. KONDO			
		Prof. G. 't HOOFT			
		Prof. B. WEBBER			
		Prof. A. ZALEWSKA			
		Prof. F. ZWIRNER			
		Ex-Officio Members:			
		Prof. M. HUYSE			
		Prof. J. DAINTON			
		Prof. K.-H. MEIER			
		Prof. M. TIGNER			
		Prof. T. WYATT			
				20	
The SPC panel was:		Matteo Cavalli,			
		Gerard 't Hooft,			
		Bryan Webber			
		Fabio Zwirner.			
		Peter Braun			

The documents made available to the panel were:	"Review of the Safety of LHC Collisions", by the LHC Safety Assessment Group (LSAG report);	LHC Safety Assessment Group(*)		"Review of the Safety of LHC Collisions", by the LHC Safety Assessment Group (LSAG report)	
		John Ellis	Theory Division, Physics Department, CERN		
		Gian Giudice	Theory Division, Physics Department, CERN		
		Michelangelo Mangano	Theory Division, Physics Department, CERN		
		Igor Tkachev	Institute for Nuclear Research , Russia		
		Urs Wiedemann	Theory Division, Physics Department, CERN		5
	"Astronomical Implications of Hypothetical Stable TeV-Scale Black Holes"	S.B.Giddings	Department of Physics, University of California, Santa Barbara	LSAG report	
		M.L.Mangano	Theory Division, Physics Department, CERN		1
Total without duplicates					26

The surprising discovery of quasi-stable "ice-9", at Brookhaven - a perfect liquid instead of an unstable hot plasma as most physicists had predicted.

# the Bulletin

**BROOKHAVEN**  
NATIONAL LABORATORY

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## RHIC Scientists Serve Up 'Perfect' Liquid

*New state of matter more remarkable than predicted, raising new questions*

The four-decade group conducts this research at BNL's Relativistic Heavy Ion Collider (RHIC) — a giant atom "smasher" — say they have created a new state of hot, dense matter out of the quarks and gluons that are the basic particles of atomic matter. But it is a state quite different and even more remarkable than had been predicted in previously published summaries of the last five years of RHIC findings. The new state

seems the coldest results and calculation using the method of string theory, an approach that attempts to explain fundamental properties of the universe using 10 dimensions instead of the usual three spatial dimensions plus time.

"The prediction of a connection between string theory and RHIC collisions is unexpected and startlinging," Orban said.

"String theory seeks to unify the two great theoretical achievements

of twentieth-century physics, general relativity and quantum mechanics, and it may well have a profound impact on the physics of the 21st century."

The papers, worked on by the four RHIC collaborations (STAR, PHENIX, PHOBOS, and STAR) for nearly a year, will be published simultaneously by the journal *Nature Physics*. A, and will also be compiled in a ENL report, the latest volume of the *American Physical Society's* April 2003 volume in Tampa, Florida.

These summaries indicate that some of the observations at RHIC fit with the theoretical predictions for a quark-gluon



From left, Raymond Orban, Eyalz Heibach, and T. W. S. Chao are in front of the STAR detector at BNL's Relativistic Heavy Ion Collider.

state that instead of behaving like a gas of free quarks and gluons, as was expected, the matter created at RHIC in heavy ion collisions appears to be more like a liquid. RHIC is fundamentally symmetric — the Nuclear Physics for DOE's Office of Science. For a list of RHIC numbers, go to [www.bnl.gov](http://www.bnl.gov), the funding link.

## Excitement at CFN Site Dedication



From left: Bobo, SHU, Dennis Kowal, DCL, Robert Ewenz, RNL, Dennis Madhwa, Ronald and Brookhaven's first President, BOA; U.S. Representative David Hobson; U.S. Representative T. W. Rangel; Pat Dunham, DCL; Raymond Orban, DCL; Eyalz Heibach, ENL; Michael Holland, ECL; Robert Mouchry, Henry Brook; Jerry and BOA, President Chaudhuri, ENL.

At the Center for Functional Nanoscale Materials (CFN) site dedication ceremony on April 15, the CFN site was unveiled — with a dramatic and auspicious — by several federal, state, and ENL leaders.

A crowd of ENL employees came out to participate in the ceremony and a welcome by Pat Dunham, Director, Laboratory Board member by request of the special interest group, U.S. Representative David Hobson, Chairman of the Energy and Water Development Appropriation Subcommittee in the House of Representatives, U.S. Representative Tim Wulpe, and Kenneth J. Frank, Director of the Office of Science. The ceremony was held at the new site preceding the opening of the new building. The new building is the largest building at the site and will house the Board of Directors, Senior Advisors, and the management of the CFN and the Laboratory's operations.

Among other distinguished guests were from the Office of Science, Patricia Palmer, Assistant Director of the Office of Basic Energy Sciences and James Foster, Associate Director for Nuclear Physics at the DOE. The event was the ENL's first

For more information on the CFN site, contact Raymond Orban, Director, DCL, or Eyalz Heibach, ENL.



From left, Robert Ewenz, ENL, and Robert Mouchry, ENL, are in front of the CFN site. Eyalz Heibach, ENL, is also present at the site.



Last Updated: Thursday, 17 March, 2005, 11:30 GMT

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## Lab fireball 'may be black hole'

**A fireball created in a US particle accelerator has the characteristics of a black hole, a physicist has said.**

It was generated at the Relativistic Heavy Ion Collider (RHIC) in New York, US, which smashes beams of gold nuclei together at near light speeds.

Horatiu Nastase says his calculations show that the core of the fireball has a striking similarity to a black hole.

His work has been published on the pre-print website arxiv.org and is reported in New Scientist magazine.

When the gold nuclei smash into each other they are broken down into particles called quarks and gluons.

These form a ball of plasma about 300 times hotter than the surface of the Sun. This fireball, which lasts just 10 million, billion, billionths of a second, can be detected because it absorbs jets of particles produced by the beam collisions.

But Nastase, of Brown University in Providence, Rhode Island, says there is something unusual about it.

Ten times as many jets were being absorbed by the fireball as were predicted by calculations.



Creating the conditions for the formation of black holes is one of the aims of particle physics

## EXHIBIT 'D'

### Production expected at the Quark factory (LHC) Source, CERN.

In the Table we see the real productions of the LHC. A black hole per second, high statistics of top quarks, standard candidates to make black holes, up to a million couples of bottom quarks and antiquarks and an undisclosed quantity of strange quarks the substance of ice-9. yet since strange quarks are lighter than bottom quarks the production will be probably of several millions per second, more than enough to create ice-9. Why the LSAG doesn't report this. Why the table of production omits deliberately strange quark production, given its enormous potential danger? Yet we can observe in the Graph/prove 2 that strange quarks require LESS energy than bottom quarks and millions will be produced per sec.

*Talk presented at the European Physical Society General Conference,  
'Beyond Einstein – Physics for the 21<sup>st</sup> Century', 11-15 July 2005, University of Bern, Switzerland.*

Table 1

Production rates of known and unknown particles at the LHC in the first year, at 10% of its nominal luminosity.

Process	Events/sec	Events for $10 \text{ fb}^{-1}$ (one year at 10% of nominal luminosity)	Remarks
$W \rightarrow e\nu$	15	$10^8$	Discovered 1983 (CERN). Studied at LEP ( $10^4$ ); Tevatron ( $10^7$ end 2007).
$Z \rightarrow ee$	1.5	$10^7$	Discovered 1983 (CERN). Studied at SLC; LEP ( $10^7$ ); Tevatron
$t\bar{t}$	1	$10^7$	Discovered 1995 (FNAL). Initial studies only, so far ( $10^4$ end 2007) – high statistics at LHC
$b\bar{b}$	$10^6$	$> 10^{12}$	Discovered 1977 (FNAL). Detailed studies at B-factories ( $10^9$ end 2007) (KEK; SLAC) – complementary studies at LHC.
Higgs boson mass 130 GeV	0.02	$10^5$	Discovery possible at Tevatron, given sufficient luminosity; large discovery potential over large mass range at LHC.
$\sim\sim$ $g\bar{g}$ mass 1 TeV	0.001	$10^4$	High mass super-symmetry, the exclusive domain of LHC.
Black holes (theories with extra dimensions) $m_{\text{p}}=3 \text{ TeV}, n=4$	0.0001	$10^3$	Wide range of quantitative predictions, depending on number and size of extra dimensions.

B:bottom quarks; t: top quarks

## **EXHIBIT 'E'**

### **Number of quarks needed to make a mass-bomb stable.**

Mr. Wen, Peng and Chen from the Institute of High Energy Physics of China, wrote the first of a series of articles that explored the number of strange quarks needed to provoke an ice-9 reaction. The graphs below explain the ice-9 reaction and show between 1,000 and 10,000 quarks make strangelets (the simplest mass-bombs) stable.

## New solutions for the color-flavor locked strangelets

G. X. Peng<sup>1,2,3</sup>, X. J. Wen<sup>2</sup>, Y. D. Chen<sup>2</sup>

<sup>1</sup>China Center of Advanced Science and Technology (World Lab.), Beijing 100080, China

<sup>2</sup>Institute of High Energy Physics, Chinese Academy of Sciences, Beijing 100039, China

<sup>3</sup>Center for Theoretical Physics MIT, 77 Mass. Ave., Cambridge, MA 02139-4307, USA

Recent publications rule out the negatively charged beta equilibrium strangelets in ordinary phase, and the color-flavor locked (CFL) strangelets are reported to be also positively charged. This letter presents new solutions to the system equations where CFL strangelets are slightly negatively charged. If the ratio of the square-root bag constant to the gap parameter is smaller than 170 MeV, the CFL strangelets are more stable than iron and the normal unpaired strangelets. For the same parameters, however, the positively charged CFL strangelets are more stable.

PACS numbers: 24.85.+p, 12.38.Mh, 12.39.Ba, 25.75.-q

After the acceptance of quantum chromodynamics as the fundamental theory of strong interactions, it became extremely significant whether a deconfined phase of matter consisting merely of quarks would be possible. Theoretical investigations show that strange quark matter (SQM), which is composed of  $u$ ,  $d$ , and  $s$  quarks, might be absolutely stable [1, 2, 3]. Because small lumps of SQM, the so called strangelets, could be produced in modern relativistic heavy-ion collision experiments, their charge property has attracted a lot of interest [4].

Originally, SQM is believed to show up with some small positive charge [2]. In June 1997, however, Schaffner-Bielich et al. demonstrated that strangelets are most likely heavily negatively charged [5]. In June 1999, it was shown that negative charge can lower the critical density of SQM [6]. In July 1999, Wilczek mentioned an “ice-9”-type transition [7], which was picked up by a British newspaper. Not long ago, in response to public concern, an expert committee published a report [8], which got positive comments [9], as well as criticisms [10]. In fact, the strangelets in Ref. [5] are not in  $\beta$  equilibrium which drives the system to flavor equilibrium, and negatively charged strangelets in normal phase have been ruled out by a recent publication [11].

Much progress has been achieved recently by the introduction of color superconductivity [12, 13]. It has been shown that bulk SQM with color-flavor locking is electrically neutral [14]. Immediately, Madsen found a solution to the corresponding system equations of strangelets, where color-flavor locked strangelets are positively charged [15], and they might be a candidate for cosmic rays beyond the GZK cutoff [16].

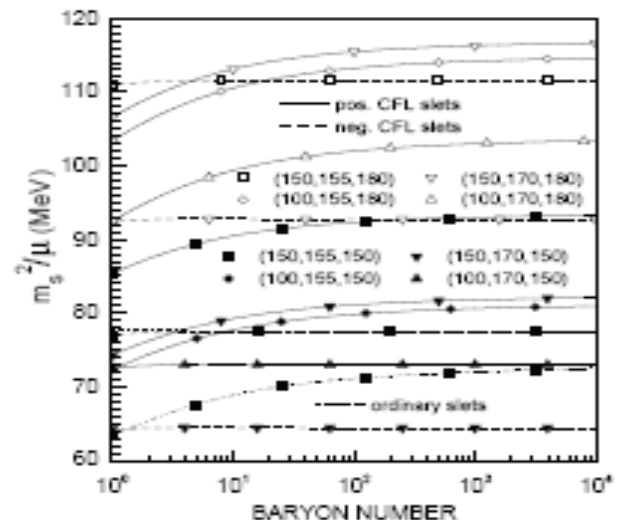


FIG. 1: The ratio of squared strange quark mass to chemical potential for different strangelets with various parameters. The solid lines are for the CFL strangelets in Ref. [15]. The dashed lines give the new solutions of CFL strangelets reported in this letter. Unlike the previous strangelets, which are positively charged, these new strangelets are slightly negatively charged, or nearly neutral. Parameters are indicated as  $(\Delta, B^{1/4}, m_s)$  in MeV.

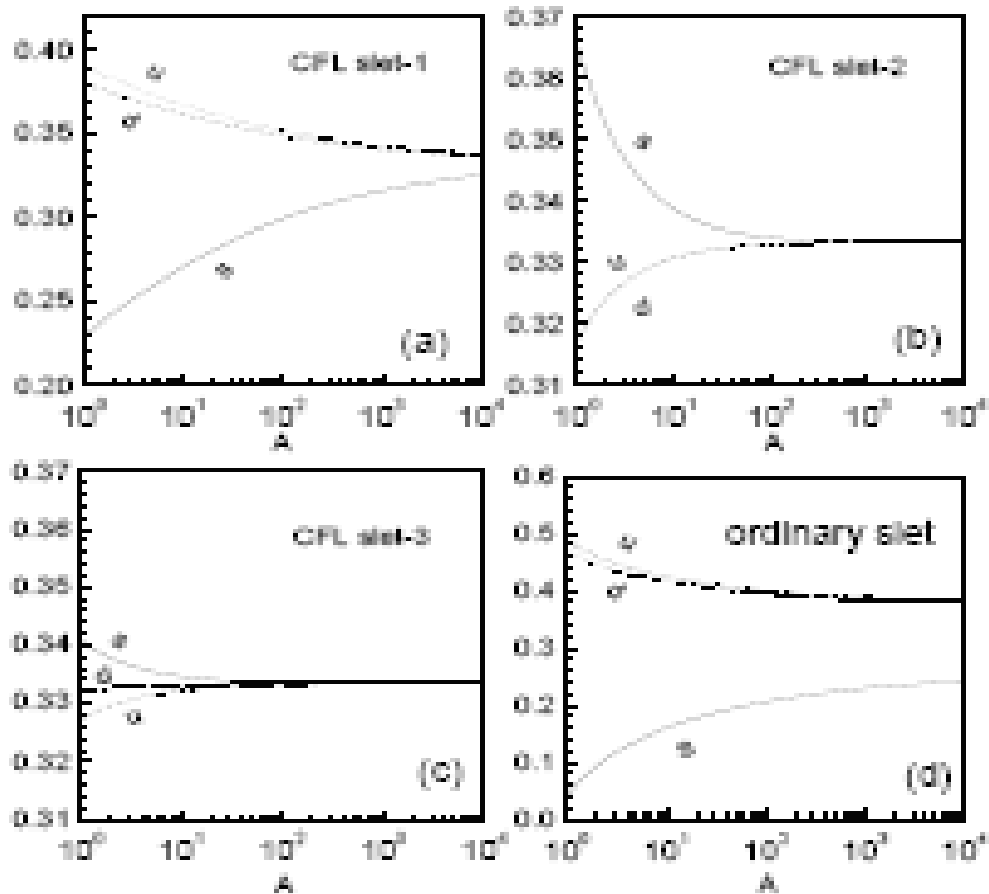


FIG. 3: Quark fractions of different strangelets. Figures (a)-(c) are for the three kinds of CFL strangelets. Figure (d) is for the ordinary strangelets. The vertical axis for each figure is the quark number density in unit of the total quark number density, or the ratio of the corresponding quark number to the total quark number.

The graphs show that around 1000 strange quarks become stable ice-9 (strangelet liquid) starting a Nova reaction (mass-bomb) regardless of the strangelet's charge.