

**From:** Margaret K. Bentley [mailto:desotom@tx.rr.com]

**Sent:** Thursday, April 23, 2009 9:00 PM

**To:** Dario Crosetto

**Subject:** Response to Dr. Jack Steinberger, Nobel Laureate and Dr. F. Ferrini, Italian Delegate to CERN regard

Dear CERN Physics Member: Because many of you requested that I keep you informed of updates, I am sending you this email. Margaret Bentley

**Following is an introduction to a dialogue between scientists, Nobel Laureates and “Decision Makers” who handle taxpayer money to ensure that research benefits mankind, and representatives of over 5,000 cancer patients and friends of cancer patients who signed a petition to CERN requesting a public scientific review of an innovative technology beneficial not only to the trigger for finding more efficiently and at lower cost any new particles in High Energy Physics (HEP), but more importantly, greatly beneficial to early cancer detection (that saves lives).**

The reason why we address this to CERN, the most prestigious research center in the world, is because the essence of the issue related to early cancer detection depends on the capability to analyze in the most efficient way and at minimum cost all information extractable from the radiation. This is for sure within the competence of the experts in the field of Particle Physics who work with CERN, the institution in this field of research that receives more funding than any other in the world (eight billion Euro just for construction of the last LHC collider, provided by taxpayers of the world, more specifically of CERN European member states and by associates from other continents including the U.S.), specifically for the purpose of acquiring experience in analyzing in the most efficient way and at a minimum cost the information obtained from radiation.

The above mentioned innovative technology can extract ALL possible information from the radiation at a lower cost compared to the technology used in current experiments in Particle Physics and in Medical Diagnostic PET devices. Sadly, this technological advance has been ignored for over a decade. We believe that there is no one better than CERN to clarify understanding of all the advantages of this innovative technology by asking all experts who have objections to bring them forward and support them with scientific arguments. Either these objections are valid and are supported by solid scientific arguments, or skeptics should open the door to progress and allow the benefit from this

innovation to be available to mankind.

This must be done because we do not want to find ourselves ten more years from now, having to tell cancer patients, YES, it was possible to save many lives through early detection thanks to a more efficient technology discovered in 1992, recognized and confirmed by a scientific review at FERMIlab in 1993, capable of extracting ALL possible information from radiation at a lower cost for each “good event” captured, allowing for a greatly reduced radiation dose to the patient while enabling early detection at the same time. But it has not been done because some experts influential in the field have ignored this invention and, although its merits have been recognized, the inventor’s project has not received funding for its implementation.

This time, with a public scientific review of this technology carried on by a prestigious institution such as CERN, in the absence of objections supported by scientific arguments from experts, we, cancer patients and friends of cancer patients, urgently intend to exert pressure on politicians and organizations that fight cancer and will ask funding agencies who address this cause to provide funds to build prototypes targeted to early cancer detection.

**Following are listed the considerations that induce us to address this issue to CERN**

1. We realize the importance of early cancer detection as the best way to substantially reduce cancer death because experimental data show a probability to save lives from 90% to 98% when it is diagnosed at an early stage
2. We understand that in order to establish an early detection it is necessary to identify the very first signals related to a change in metabolism that indicates a mutation of normal cells of the body into cancer cells
3. We understand that in order to obtain an early detection it is necessary to capture accurately as many signals as possible arriving from the tumor radioactive markers which have been injected into the patient’s body.
4. We are aware that CERN’s main activity is specifically that of gaining experience in finding the best way of extracting information from radiation. This is the same activity pursued in Nuclear Medicine. Both, CERN and Nuclear Medicine needed to find a solution to extract ALL information from the radiation.
5. We learned that an invention in 1992 solved the problem and provided the capability to extract all information from the radiation and that this discovery was recognized by an international panel of reviewers at FERMIlab in a written report stating the merits of this invention and also that it “*could be cost competitive.*”
6. Exactly in regard to this invention, by means of a simple analogy proposed by the inventor and demonstrated by high school students, we were able to grasp the genius of the invention in its simple mechanism that allows sustaining a high input data rate with the capability of detailed and accurate analysis, therefore able to use

all possible information from the radiation.

7. We value the importance of this invention for the fact that it uses at its best all radiation allowing early cancer detection with a radiation dose not dangerous to the patient and we hope that this invention will materialize soon in an instrument which is badly needed.
8. We are puzzled why the advantages in terms of efficiency and cost of this invention were not adopted. Its programmability would allow it to be used for all experiments, including for Positron Emission Technology for early cancer detection. Instead, other traditional approaches were adopted, each suitable only for one experiment and in spite of their lower efficiency and higher cost.
9. We have verified that what is expressed in the final report by the FERMIlab committee (and by other committees in regard to successive inventions by the same inventor) has been demonstrated with the development in hardware by the inventor of his innovative approach. This confirms that his claims were correct. We were stunned by the difference in cost of the development of the two approaches. In fact, the inventor's approach turned out to cost over 10,000 times less than those developed for use in different experiments in high energy physics from 1993 to today.
10. We also discovered that the inventor's project was unfortunate in two circumstances. Although his innovative idea was adopted by hundreds of scientists of the half billion dollar GEM experiment at the Superconducting Super Collider (SSC), the inventor's project unfortunately did not receive funding because the entire \$11 billion SSC project was cancelled by the U.S. Congress. Following this event, the inventor's project was adopted by the trigger of LHCb experiment at CERN in 1995. However, merits of the project notwithstanding, the U.S. Department of Energy (DOE) who was funding American researchers on LHCb experiment in 1999 decided not to continue that funding for any researchers working on LHCb experiment. Unfortunately for a second time, the inventor's project went unfunded. Another European Funding Agency took over LHCb trigger choosing a less efficient and more expensive solution that was not suitable to solve the trigger of other experiments.
11. The facts reported in the previous item made us realize that on those occasions, scientific merit did not prevail and the direction of research was driven by the choices made by those who manage funding. One can understand how things like this happen because:
  - a) A funding agency, a country (or a scientist who is very influential politically in the direction of research) that manages funding, exercises all their power to have funds spent the way they like (without applying the rule of highest scientific merit).
  - b) The rules of research laboratories such as CERN where it is contemplated that each member state should receive a return on investment in terms of jobs, projects, construction of parts, etc. assigned to groups, people,

companies, etc. of each country. This is independent of whether it is the best technology or not.

12. We realize that when scientific merits do not prevail in Particle Physics experiments, this only causes a delay and a higher cost in discovering new particles. **Much more serious and damaging are the consequences when it is chosen not to fund a project** like the one of the inventor that increases enormously the efficiency of the Medical Imaging Devices for early cancer detection, **because this affects billions of people.** For this reason we should overcome all barriers of rivalry between different countries (USA, Europe, Japan, etc.), between funding agencies, between power gained by different scientists, and it should not make a difference from which country an inventor developed his idea.

All reviewers who have later blocked this innovation should support their objections with scientific arguments, in a direct confrontation with the inventor, because we urgently need this clarification because it affects our health and that of future generations. We would like to understand if the reviewers' objections have been driven by supported scientific argument, or with no scientific reason the innovative, more efficient and cost effective solution, was rejected to allow university research groups (including some of these reviewers) to gain funding to implement in parallel multiples of the same development.

We are drawn to this conclusion because it has been shown (by the construction over the past twelve years of different Trigger systems for LHC, each not capable of solving the problem of others, costing all together hundreds of millions of dollars in their development [as reported in the referenced material](#)) that had the inventor received funding, **development expense would have been 10,000 times less and the enormous potential to improve research results achieved.** In other words, if such an innovation had been fully implemented, these groups would have had no reason to ask their governments for hundreds of millions in funding, nor would they have reason to ask for future funding for trigger upgrade to cope with the more stringent requirements of increased LHC luminosity in 2015 - because **this invention would already have solved the problem!**

13. We believe that it is CERN's responsibility to make scientific truth emerge in regard to the possibility to capture the radiation data with the highest efficiency and at the minimum cost in high energy physics as well as in the field of Medical Imaging. Therefore we do not understand why our petition has not yet been considered.

CERN Director General's statement on the web: *"With 2009 being declared the Year of Creativity and Innovation by the European Union, the 20th anniversary of the Web serves as a timely reminder of the powerful role that creativity in basic research plays as a driver of innovation"*.

CERN's mission statement: "CERN shall organize and sponsor international co-operation in research, promoting contacts between scientists" [and should be] "...seeking and finding answers to questions about the Universe ...Advancing the

frontiers of technology ...Bringing nations together through science ...Training the scientists of tomorrow”.

It is of great interest to know the truth about scientists' possible objections supported by scientific arguments about the innovation that greatly improves the efficiency in particle detection and lowers the cost for each “good particle” detected (beneficial to medical imaging as well) that was approved by an international scientific review in 1993 at FERMIlab (including CERN scientist panelists) but never funded. Therefore, we request that the same 100 meters in length of posters made by the inventor and displayed in the auditorium of FERMIlab during the 1993 review (and also recently at a public event at Centro Incontri Provincia di Cuneo, Italy) be displayed at CERN. This action would fulfill the components of the CERN mission of training, bringing nations together, etc. and it will give us the opportunity to hear the possible objections regarding a subject about which we are very much concerned.

14. We are making an appeal to the governments of CERN member state countries and associates who provide funding to CERN and its research. We make this appeal through their delegates, and ultimately those who pay taxes. They have given CERN the mandate to carry on research for the benefit of mankind. Now they should strongly request the organization of a public scientific review of an innovation already approved by FERMIlab in 1993 in order to remove all obstacles that were an impediment to funding during all these years, so that early cancer detection can become a reality.
15. We want to underscore to the delegates who manage funding to CERN and its research (on behalf of the taxpayers they represent) that during the past ten months, we, together with cancer patients, relatives, friends of cancer patients and the inventor, in parallel with the petition, have submitted numerous legitimate and pertinent questions to those responsible for research in the field of Particle Physics (CERN and IEEE-NSS-MIC). We have never received any answer. For this reason we are now forced to address this issue with the delegates, to the Ministers of Research of various countries and ultimately to the citizens who are the tax payers so that the researchers will be accountable and provide transparency in use of the funds used to develop research for the benefit of mankind. And because it has been proven that [10,000 times less](#) could have been spent to develop an innovative more efficient project, answers should be provided that clarify the reasons why this did not occur and why an innovation of such magnitude that can reduce radiation to the patient and save many lives through early cancer detection is not valued. In Appendix A we report our attempts to communicate with CERN and with the experts in particle physics during the past ten months that received no answer and were ignored.
16. In the event CERN continues to ignore the request to address this issue that is specifically within its competence and does not proceed with a public scientific review of the innovative technology targeted to early detection, it will be legitimate to ask ourselves: What value is received by funding this research center which refuses to provide a service that specifically requires competence in Particle

Physics and which can evaluate if reviewer's objections to implement and fund such innovations (that have blocked it for several years) have a scientific basis or not. This will be useful to provide a clear response to those who believe in CERN competence, and in this way the world will have the answer they have expected and requested for a long time from CERN experts.

Sincerely,

Margaret Bentley and Vanna Sereno

**A few references related to a simple explanation of the innovative concept:**

Validation is supported by the hardware built by the inventor and by the **explanation of the key concept that is understandable by laymen with an analogy** demonstrated by high school students as shown in the video <http://www.youtube.com/watch?v=O45IE5jwQXQ> and described on page 26 of the article presented at the "Seminar on Planetary Emergencies" in 2008 at the World Laboratory, Erice (see <http://www.crosettofoundation.com/uploads/211.pdf>).

**For people expert in the field of particle detection, the innovative concept is explained in one page** on page 15 of the article [www.crosettofoundation.com/uploads/100.pdf](http://www.crosettofoundation.com/uploads/100.pdf) and in one figure, Figure 1, page 2 of the article [www.crosettofoundation.com/uploads/107.it.pdf](http://www.crosettofoundation.com/uploads/107.it.pdf).

**A more complete description of the invention** is available in a 45 page peer review article in Nuclear Instruments and Methods in Physics Research (part 1 <http://www.crosettofoundation.com/uploads/147.pdf>, and part 2 <http://www.crosettofoundation.com/uploads/148.pdf>

**LINKS TO THE CORRESPONDENCE BETWEEN SCIENTISTS IN PARTICLE PHYSICS AND REPRESENTATIVES OF THE PETITION TO CERN:**

[Use CTRL + Click to follow link]

1. [Appendix A: events of the past ten months that were ignored and did not receive an answer](#)
2. [Response from Bentley-Sereno \(cancer patient representatives\) to Dr. Ferrini \(CERN Delegate from Italy\). April 21, 2009.](#)
3. [Response from the inventor to Dr. Steinberger \(Nobel Laureate\). January 15, 2009](#)
4. [Response from Bentley \(cancer patient representative\) to Dr. Steinberger \(Nobel Laureate\), January 14, 2009.](#)
5. [Response from Dr. Ferrini \(CERN Delegate from Italy\) to Bentley-Sereno \(cancer patient representatives\). January 14, 2009](#)
6. [Response from Bentley-Sereno \(cancer patient representatives\) to Dr. Ferrini \(CERN Delegate from Italy\). January 9, 2009.](#)
7. [Response from Dr. Ferrini \(CERN Delegate from Italy\) to Bentley-Sereno \(cancer patient representatives\). January 9, 2009](#)
8. [Response from Dr. Ferrini \(CERN Delegate from Italy\) to Bentley-Sereno \(cancer patient representatives\). December 8, 2008](#)
9. [Response from Bentley-Sereno \(cancer patient representatives\) to Dr. Ferrini \(CERN Delegate from Italy\). December 5, 2008.](#)
10. [Letter from cancer patients and friends of cancer patients \(Danilo Verra, Aldo Dutto, Vanna Sereno, Maria Garelli, Marita Banchio, ITALY; Margaret Bentley, Frank Stocker, Ann Montgomery, USA; Menotti Mazzuca, Franco Gaspari, CANADA\) to the Representatives of Countries supporting CERN LHC project and to those officials who have at heart research for the benefit of mankind. November 25, 2008.](#)
11. [Response from Dr. Steinberger \(Nobel Laureate\) to Bentley \(cancer patient representative\). October 20, 2008](#)
12. [Letter from Bentley to Eminent Scientists. October 16, 2008.](#)

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