

**U. S. FEDERAL COURT MIDDLE DISTRICT OF FLORIDA TAMPA  
DIVISION**

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CIVIL CASE NUMBER 8:07-CV-00308-T-23MSS

**Ruggero Maria Santilli**, Palm Harbor, Florida

*PLAINTIFF*

**K. K. Phua** River Edge, NJ

**K. K. Phua, Registered Agent, World Scientific Publish. Co., Inc.**, New Jersey  
**Cornell University**, Ithaca, NY

**Fabio Cardone**, Roma, Italy,

**Roberto Mignani**, Rome, Italy,

**Alessio Marrani**, Rome, Italy,

**Istituto NaZionale Fisica Nucleare**, Rome, Italy,

**Consiglio Nazionale Ricerche**, Roma, Italy,

**Universita' di Roma Tre**, Rome, Italy,

**Universita' dell'Aquila**, L'Aquila, Italy

*DEFENDANTS*

**August 7, 2007**

## **SCIENTIFIC BACKGROUND**

### **FOREWORD**

In a large variety of works over forty years of research, the plaintiff has developed a body of works [1-36] internationally known as *Santilli isotopies (or Lie-Santilli isotopic lifting, or generalization) of special relativity, the Minkowski space and the Lorentz symmetry (or transformations)* for physical conditions different than those in vacuum (such as in the interior of physical media not necessarily transparent to light) with the understanding that conventional formulations are assumed, of course, to be *exactly valid* in vacuum and are recovered identically and uniquely by the generalized theories when motion returns to be in vacuum.

The studies on the generalized formulations were initiated by the plaintiff as part of his Ph. D. studies at the University of Torino, Italy, in 1967 [2] with the first deformations of Lie's theory,  $(A, B) = pAB - qBA$  and other formulations in scientific records. The studies were intensified in the late 1970s and early 1980s [3-5] when Santilli was a member of Harvard University under five contracts with the U. S. Department of Energy numbers ER-78-S-02-47420.A000, AS02-78ER04742, DE-ACO2-80ER10651; DE-ACO2-80ER-10651.A001, and DE-ACO2-80ER10651.A002; contracts, of course, administered by Harvard University.

The ultimate objective for the DOE funding of Santilli's research was, and remains to this day, the development of basically new methods permitting the conception and quantitative

development of *new clean energies and fuels* so much needed by mankind for the solution of the increasingly cataclysmic climactic changes, since all possible energies and fuels permitted by Einsteinian theories and quantum mechanics had been fully identified by the middle of the 20-th century, and they all resulted to be environmentally unacceptable.

Thanks to the subsequent participation by American and European investors, the original DOE objective has been fully accomplished by Santilli, since his covering theories have indeed produced new energies and fuels currently seeing large industrial developments in the U.S.A as well as in various foreign countries (see, the new clean fuel technology in the web site [www.magnegas.com](http://www.magnegas.com) and others that cannot be disclosed at this writing due to contractual obligations for industrial secrecy).

During a series of papers up to 1992 [38-45], defendants F. Cardone, R. Mignani and A. Marrani properly admitted Santilli's paternity and properly quoted the originating literature in their works. As one example among many, in work [45], defendant R. Mignani clearly identifies beginning with the Abstract "Santilli Lie-isotopic lifting of special relativity" first proposed in Ref. [5a] of 1983 published by *Nuovo Cimento* (a journal of the Italian Physics Society) and then said defendants continues with the proper identification of Santilli's paternity and the proper quotation of the copyrighted originating works for the rest of the paper. The same occurrence holds for all papers by defendants up to early 1992.

From the end of 1992 on, defendants Cardone, Mignani and Marrani decided to plagiarize Santilli's lifetime work under the name of "deformed special relativity, Minkowski space and Lorentz symmetry". as it is the case in works [37] and numerous other works to be identified during the discovery process of this lawsuit.

The paternity fraud initiated with the quotation of only one of the vast body of Santilli's works studiously selected to have a date following the dates of papers by said defendants. For instance, in the plagiarizing book [37a] the defendants initiated with the quotation of their works of 1992, that is per se a paternity fraud, and then continued by quoting only one of Santilli works of 1997 intermixed in purpose with others, and studiously abstained to quote Santilli originating paper of 1983 [5a].

Subsequently, any and all quotations of Santilli's lifetime of research in the field was completely ignored by the defendants. As one can verify, defendants Cardone, Mignani and Marrani published in the Cornell University arxiv (papers (identified a search under "Fabio Cardone" and appended in Exhibit G) specifically and entirely devoted to Santilli generalizations of special relativity, the Minkowski space and the Lorentz symmetry under the fraudulent name of "deformations" of the same, without any quotation whatever of Santilli copyrighted works.

The studious illusory grounds for the above posturing by defendants Cardone, Mignani and Marrani was the claim that they study the same theories developed by Santilli but formulated on a conventional numerical field, thus belonging to the field of "deformations." The paternity fraud occurs because Santilli is indeed the originator of deformation theories with papers initiated in 1967 as recalled above [2]. In any case, the original derivation of the generalized special relativity, Minkowski space and Lorentz transformations, Ref. [5a] of 1983, was indeed done over a conventional numerical field, as serious scholars in good faith can verify. The fraud was premeditated since said defendants had been Santilli's associates until 1992 and knew very well that Ref. [5a] presents "deformations" in their language. The novel iso-, geno- and hyper-numbers were discovered by Santilli only in 1993 [7e] (see

Santilli's paper in Exhibit C).

In any case, Santilli used the word "isotopies" in paper [5a] in its Greek meaning of "preserving topologies," namely, for the explicitly stated intent of honoring the memory of Einstein, Minkowski and Lorentz since their historical axioms were represented identically in Ref. [5a] and merely realized in a broader way. By comparison, the preservation of the historical axioms or the local isomorphism of the "deformed Lorentz symmetry" with the original one (stressed in Ref. [5a]) are absent in the works by defendants Cardone, Mignani and Marrani who, consequently, perpetrate a paternity fraud even against Einstein, Minkowski and Lorentz.

Also, Ref. [5a] achieved for the first time in scientific records the universal symmetry  $\hat{O}(3, 1)$  of the generalized line element  $x^1 b_1^2 x^1 + x^2 b_2^2 x^2 + x^3 b_3^2 x^3 - x^4 b_4^2 x^4$ , where  $b_{\rho, \rho} = 1, 2, 3, 4$  are nonsingular but otherwise arbitrary functions of any needed local variable within physical media, such as time  $t$ , coordinates  $r$ , momenta  $p$  (hence energy  $E$ ), density  $\mu$ , temperature,  $\tau$ , etc. and the speed of light assumes the local form  $C = cb_4$  or the more familiar expression  $C = c/n, b_4 = 1/n$  where  $c$  is the speed in vacuum and  $n$  is the usual index of refraction. On serious scientific grounds, all other symmetries of the same line element are isomorphic to  $\hat{O}(3, 1)$ . Period. The rest is vulgar scientific corruption.

Immediately upon receiving communications in the early 1990s by scientists in various countries of plagiarism, Santilli appealed to defendants Cardone, Mignani and Marrani for scientific ethics and decency, that can only be implemented via the quotation of Santilli's originating works, of course, jointly with others, but, also of course, IF directly relevant and IF listed in chronological order. These appeals turned out to be useless due to the unobstructed backing to the defendants by Italian institutions and universities. Hence, Santilli was forced to file in 1995 a first legal action against said defendants appended in Exhibit K, which legal action was sent in copy to presidents of all major Italian Funding agencies and universities. Defendants Cardone, Mignani and Marrani continued their paternity fraud in a totally obvious way, a posture that can only be based on full support in said paternity fraud by the Italian institutions and universities supporting the research.

The situation collapsed in 1996 when Santilli received additional alarmed communications from scientists the world over that Cornell University had permitted the uploading by defendants Cardone, Mignani and Marrani of a series of papers treating exactly the same theories, by using exactly the same words and exactly the same symbols of Ref. [5a], yet *without any quotation whatever of Santilli's originating works*, as the scholar in good faith can verify in Exhibit G. Additionally, serious scholars were alarmed because World Scientific had permitted the publication of a book on "Deformed Special Relativity" that constitutes paternity fraud beginning with the title because "Santilli deformations of special relativity" originated in paper [5a] of 1983 were not quoted at all in said book, despite the knowledge by the authors documented above.

The very arrogant ignorance of Santilli respectful appeals for corrections by Cornell University, World Scientific and the Italian institutions funding and supporting the defendants work, then rendered mandatory the filing of this lawsuit.

It is un reassuring that Santilli's covering theories are seeing great successes and large investments in the *industry*, while the same theories are beginning to be known in *academia* only recently, evidently due to known academic opposition to basic novelty. Yet, it is an easy prediction that the solution of the huge environmental problems afflicting our contemporary

society will indeed require the participation by academia, and cannot be solely achieved via industrial research conducted in secrecy to avoid notorious academic oppositions.

Hence, the scholar reading this Scientific Background in good faith should always keep in mind that this lawsuit has been filed because the pursue of said vital environmental needs is severely damaged by the defendants. In fact, the gross plagiarism by defendants Cardone, Mignani and Marrani causes serious damages to environmental research because, as shown in this Scientific Background, their paternity fraud has been done improperly, thus being catastrophically inconsistent. Similarly, Cornell University organized suppression of scientific democracy in their arXiv in violation of laws pertaining to public financial support (and other violations of U. S. Federal and State Laws) is inflicting an a severe damage to qualified searches for new clean energies and fuels.

This Scientific Background is intended to offer to the serious scholars with a serious commitment to scientific ethics, decency and accountability, the necessary elements to verify that the "deformed" theories by defendants Cardone, Mignani and Marrani are indeed a trivial copy of Santilli early deformations defined over a conventional field of numbers. The rest of the presentation is intended to outline the *Theorems of Catastrophic Mathematical and Physical Inconsistencies* of noncanonical and nonunitary theories over conventional fields that are nowadays essential to distinguish between a serious theory and a scientific fraud.

The clear understanding is that the serious scholar cannot possibly achieve a serious knowledge of this new field via the sole glancing at an exhibit of a federal lawsuit, and must study in detail the post Ph. D. literature, beginning with a study of its novel mathematics, such as a study of: the two volumes of foundations of theoretical mechanics published by Springer Verlag [12]; the two volumes of generalizations of Galileo and Einstein relativities [14] of 1991; and the two volumes on the novel hadronic mathematics, mechanics and chemistry [22] under finalization available in pdf format in the web site <http://www.i-b-r.org/Hadronic-Mechanics.htm>

## **HISTORICAL NOTES**

A main feature of special relativity is the constancy of the speed of light  $c$  in vacuum. This feature is technically represented by the invariance of the speed of light under transformations of space and time coordinates discovered by H. A. Lorentz in 1904 (see reference [1a] below), and today known as the Lorentz transformations or symmetry.

Additionally, Lorentz attempted the achievement of the broader transformations leaving invariant the more general case of the locally varying speed of light  $C = c/n$  within transparent physical media with index of refraction  $n$  [1b]. While Lorentz succeeded in achieving the invariance of the "constant" speed  $c$ , he failed to identify the broader transformations of space and time leaving invariant the locally variable speed  $C = c/n$ . Due to the successes of special relativity, Lorentz's latter attempt was vastly forgotten throughout the 20-th century, although said attempt did not escape Pauli's attention who quoted Lorentz work [1b] in his book on special relativity [1c].

## **OUTLINE OF SANTILLI RESEARCH IN DEFORMATIONS AND ISOTOPIES**

Santilli has dedicated his lifetime of research to the study Lorentz's problem [1b] due to its fundamental character for all of physics. In the same way as the conventional Lorentz transformations in vacuum are the foundations of special relativity, the discovery of the broader transformations leaving invariant the locally varying speed  $C = c/n$ , are expected

to characterize a broader relativity, this time applicable within physical media, such as those existing inside particles, nuclei and stars. In turn, the expected broader relativity was predicted to permit the conception and quantitative treatment of basically new clean energies and fuels that are simply inconceivable with special relativity, as subsequent events proved to be the case.

The above objective lead to comprehensive studies by Santilli including 250 technical papers published in journals of the American, British, Italian, Chinese, Indian, Pakistan, Iranian, Ukrainian, Russian and other physics societies [2-29], 14 post Ph. D. level monographs [12-22], as well as hundreds of technical papers by independent scientists and various monographs [23-29] carrying the name Santilli in the title. A comprehensive list of all contributions is available in the 90 pages long General Bibliography of books [22].

The outcome of these studies is given by a structural broadening of classical and quantum mechanics into a new discipline proposed by Santilli under the name of "hadronic mechanics" that includes as particular cases: a first broadening of special relativity known as "Santilli isotopies of special relativity" or "Santilli isorelativity" for time reversible dynamics within matter media; a second broadening of special relativity known as "Santilli genotopies of special relativity", or "Santilli genorelativity" for short for time irreversible dynamics within matter media; and corresponding isodual images of the iso-and geno-relativities reversible and irreversible dynamics within antimatter media; all broader relativities being, by construction, a covering of special relativity, that is, admitting the latter as a simple particular case when dynamics returns to be in empty space [12-22].

Lorentz failed to achieve the invariance of  $C = c/n$  because he used the same mathematics that had permitted him to achieve the invariance of  $c$ , the so called Lie's theory with celebrated nonassociative product  $[A, B] = AB - BA$ , where  $A, B$  are matrices and the products  $AB, BA$  are associative. By using Lie's theory, the transformation of a generic physical quantity  $A$ , for instance, its variation in time, is given by the finite Lie's group  $A(t) = U(t)A(0)U(t)^+ = [exp(iHt)]A(0)[exp(-itH)]$ , with infinitesimal form given by the celebrated Heisenberg equation at the foundation of quantum mechanics  $idA/dt = AH - HA$ , where  $H$  is the total energy. Santilli's view since his graduate studies in the 1960s is that the invariance of  $C = c/n$ , and related broadening of special relativity, must be attempted by first broadening Lie's theory and related mathematical setting, such as vector and metric spaces, numerical fields, functional analysis, etc.

The very first papers published by Santilli in 1967-1968 as part of his graduate studies [2a, b,c] provided the first generalization of Lie algebras known in physics, that of the Lie-admissible type with product  $(A, B) = pAB - qBA$  where  $p$  and  $q$  are non-null scalars, Lie-admissibility is referred to Albert's notion of admitting Lie algebras as the attached antisymmetric product. This proposal permitted the generalized transformations  $A(t) = X(t)A(0)Y(t)^+ = [exp(iHqt)]A(0)[exp(-itpH)]$  with infinitesimal version characterizing the Heisenberg-Santilli time evolution  $idA/dt = pAH - qHA$ . The author then conducted comprehensive research on the mathematical studies of Lie-admissible algebras and their applications to physics [2-36].

During these studies it became evident that, even though Lie's theory was indeed broadened, the above Lie-admissible theory did not permit the achievement of the desired invariance of  $C = c/n$ . Additionally, Santilli has stated in his works that his initial Lie-admissible formulations suffered "catastrophic mathematical and physical inconsistencies"

presented in details in [30-36]. This is due to the fact that Lorentz transformations such as  $A(t) = U(t)A(0)U(t)^+$  are canonical at the classical level and unitary at the operator level in which case they preserve the basic unit in the sense that  $I \Rightarrow I' = UIU^+ = U^+U = I$ . In turn, this basic property implies a number of features that are crucial for the mathematical and physical consistency of any theory, such as the invariance of the basic units of measurements, the prediction of the same numerical values under the same conditions at different times (called invariance over time), verification of the causality law (the effect must follow the cause), and others.

## CATASTROPHIC INCONSISTENCIES OF CARDONE-MIGNANI-MARRANI WORKS

By the mid 1970s it became known that a necessary condition to achieve the invariance of  $C = c/n$  is that the related transformations must "not" preserve the unit, i.e.,  $UIU^+ \neq I$ , a property known as noncanonicity or nonunitarity. In fact, the desired representation requires the transition from the Minkowski metric  $m = \text{Diag.}(1, 1, 1, -c^2)$  to the broader form  $m^* = \text{Diag.}(1, 1, 1, -c^2/n^2)$  that is only possible via said noncanonical or nonunitary transform. In turn, the lack of conservation of the unit caused serious problems of mathematical and physical consistency today known under the name of "theorems of Catastrophic Mathematical and Physical Inconsistencies of Noncanonical and Nonunitary Theories" presented in details in papers [30-36] and monographs [22].

On mathematical grounds, the lack of invariance over time of the basic unit causes the loss over time of the basic numerical field (due to the crucial dependence of all numbers on the unit). In turn, the loss of the numerical field causes the collapse of the metric and other spaces, functional analysis, and all remaining mathematical structures. On physical grounds, the loss of the basic unit over time causes the lack of time invariance of the units of measurements, the impossibility of predicting the same numerical values under the same conditions at different times, the loss of observables, the loss of causality (the effect may precedes the cause), and other catastrophic inconsistencies [25-31].

**A central technical aspect of the claim for fraud by defendants Cardone, Mignani and Marrani of this lawsuit is that, Lorentz transformations  $A(t) = U(t)A(0)U(t)^+$  preserve the speed of light in vacuum at all times because they are canonical or unitary,  $UU^+ = U^+U = I$ , for which property we have the invariance of the Minkowski metric  $m = \text{Diag.}(1, 1, 1, -c^2) \Rightarrow m' = UmU^+ = \text{Diag.}(1, 1, 1, -c^2) = m$  that includes as particular case the invariance of the speed of light in time  $c \Rightarrow c' = c$ . On the contrary, all generalizations of Lorentz transformations  $A(t) = W(t)A(0)W(t)^+$  leaving invariant the locally varying speed  $C = c/n$  are necessarily noncanonical or nonunitary,  $WW^+ \neq I$ . Consequently, they do not leave invariant the generalized metric  $m = \text{Diag.}(1, 1, 1, -c^2/n^2) \Rightarrow m' = WmW^+ \neq m$  and, in turn, the locally varying speed of light is not conserved over time under the same conditions  $C = c/n \Rightarrow C' = c/n' \neq C$ . The count on fraud perpetrated by defendants Cardone, Mignani and Marrani in works [37] and in numerous other works published by World Scientific and other publishers is that, in their attempt at hiding their plagiarisms of "Santilli's isotopies" into the "deformations", they formulated Santilli generalized Lorentz transformations on conventional n numbers and fields, rather than on Santilli isonumbers and isofields as needed for**

the invariance illustrated below, thus being noncanonical or nonunitary. Consequently, as improperly formulated, said "deformed Lorentz transformations" do not leave the local speed of light invariant over time under the same physical conditions,  $C = c/n \Rightarrow C' = c/n' \neq C$ . The presentation via "deformations" is fraudulent because defendants Cardone and Mignani participated in the formulation of the known Theorems of Catastrophic Inconsistencies, Refs. [30-36] as, proved beyond credible doubt by paper [30] co-authored by defendant Mignani, and as the plaintiff will document to this Honorable Court beyond doubt. Hence, even ignoring the count on plagiarism, defendants Cardone and Mignani perpetrated an intentional, premeditated, malicious and conspiratorial fraud under the use of public funds hoping that, on such advanced topic, their institutions, publishers and readers at large would not identify the fraud due to the specialized character of the field.

### CONSISTENCY OF SANTILLI'S ISOTOPIES OF SPECIAL RELATIVITY

The lesson learned is that the generalization of Lie algebras into broader algebras, such as the "deformed" Lie algebras with product  $AB - qBA$ , when formulated with the same mathematics of Lie's theory (same numerical fields, same functional analysis, etc.) are catastrophically inconsistent. That is the reason Santilli abandoned their study despite having discovered them first in 1967 [2a].

Ironically, at the same time the American Physical and Mathematical Societies, the British Physical and Mathematical Societies and other societies published a river of papers on said deformations in complete oblivion of their catastrophic inconsistencies as well as of their origination of 1967 [2a], with the exception of the Italian Physical Society that did publish indeed memoir [36] including the Theorems of Catastrophic Inconsistencies, and with the exclusion of the Italian mathematical Circle in Palermo that dedicated an entire issue of their journal in 1996 to Santilli isotopies, including memoirs [7e,5n] presenting a full treatment of said inconsistencies as well as their resolution.

Additionally, Lorentz transformations and Lie algebras in general characterize conservation laws of physical quantities in view of the totally antisymmetric character of the Lie product  $[A, B] = AB - BA = -[B, A]$  for which we have the trivial conservation of the energy  $i dH/dt = HH - HH = 0$  and similar conservation of other total quantities. It was known since the early papers of 1967 [2a,b,c] that Santilli Lie-admissible algebras can only characterize nonconservative systems due to interaction with the external environment because the generalized product is not totally antisymmetric,  $(A, B) \neq -(B, A)$ . Rather than conservation laws, we have in this case the broader "time rate of variation of physical quantities", such as that for the energy  $i dH/dt = (p-q)HH$  and similar nonconservations for other quantities, for which conservation laws are a trivial particular case. This created the need for a simpler version of Santilli Lie-admissible algebras permitting the invariance of  $C = c/n$  for a fixed  $n$ , that is, for one given specific medium.

When Santilli joined Harvard University in 1978 under support of the U. S. Department of Energy, he initiated systematic research along the latter lines in papers [3a,b,c] by introducing for the first time in scientific records:

1. A first step-by-step broadening (called "lifting") of Lie' theory of the so-called isotopic type (in the sense of preserving the original axioms), including the isotopic lifting of envelop-

ing associative algebras, Lie algebras, Lie transformation groups and the Lie representation theory, today known as "Lie-Santilli isothery" [23-29], based on the Lie-Santilli isoproduct  $[A, B]^* = ATH - HTA$ , Lie-Santilli isotransformation group  $A(t) = WA(0)W^+ = [\exp(iHTt)]A(0)[\exp(-itTH)]$ , and Heisenberg-Santilli isoequation  $idA/dt = ATH - HTA$ , where T is a fixed, positive-definite but otherwise arbitrary function, matrix or operator;

2. A step-by-step broadening of Lie-Santilli isothery of the so-called genotopic type (in the sense of inducing new axioms), including a broadening of enveloping isoassociative algebras, Lie-Santilli isoalgebras, isogroups and the isorepresentation theory, today known as Lie-Santilli genotheory [23-29], based on Santilli's Lie-admissible genoproduct  $(A, B)^* = A < B - B > A = A(<T)B - B(T>)A$ , Lie-Santilli genotransformation  $A(t) = [\exp(iHT>t)]A(0)[\exp(-it<TH)]$ , and Heisenberg-Santilli genoequations  $idA/dt = A < H - H > A = A(<T)H - H(T>)A$ ;

3. Two sequential step-by-step broadening of Galileo's relativity (see the title of [3a]) and quantum mechanics, one for the isotopic case with conventional total conservation laws characterized by the above Lie-Santilli transformations and Heisenberg-Santilli isoequation, and the second for the broader case of nonconservative systems with time-rate-of-variation of physical quantities with the above Lie-Santilli genotransformation and Heisenberg-Santilli genoequations.

In 1979, Santilli moved to Harvard's Mathematics Department where he initiated systematic studies of his isotopic and genotopic theories presented in papers [3-35] and monograph [7-15]. Following laborious efforts, Santilli achieved the following basically new mathematics, today known as "Santilli iso- and geno-mathematics" for matter and their isoduals for antimatter that are crucial for the proper formulation and treatment of the generalized relativities of isotopic, genotopic and isodual type because necessary for by-passing the theorems of catastrophic inconsistencies.

*Isomathematics* is based on: 1) The lifting of the trivial unit of conventional mathematics (the number 1 dating back to biblical times) into the most general possible matrix or integrodifferential operator  $\hat{I} = \hat{I}(t, r, p, E, \mu, \tau, \dots)$  provided that it is positive definite, thus invertible,  $\hat{I} = 1/T > 0$ ; 2) The generalization  $A \hat{\times} B = ATB$  of the conventional product  $AB$  in such a way to admit  $\hat{I}$ , rather than 1, as the correct left and right unit,  $\hat{I} \hat{\times} A = A \hat{\times} \hat{I} = A$  for all A of the set considered; and 3) the consequential generalization of the "totality" of the mathematics underlying Lorentz transformations with no exception. A crucial point of this lawsuits, for all claims of plagiarisms, fraud, deception, etc. is a technical knowledge that the lack of lifting of even "one" quantity or operation of Lorentz theory activates said theorems of catastrophic inconsistencies mentioned earlier.

The broader *genomathematics* is based on: 1) the assumption of a nowhere singular but nonhermitean generalization of the unit 1, resulting in this way in two generalized units  $I^> = 1/T^>$  and  $I^< = 1/T^< = (I^>)^+$ , one used to characterize motion forward in time and the other motion backward in time; 2) two compatible generalizations of the product  $A > B = A(T^>)B$  and  $A < B = A(<T)B$ ; and 3) the corresponding dual generalization of the totality of the mathematics of Lorentz transformations to avoid the activation of the theorems of catastrophic inconsistencies [30-36], that is, to avoid fraud, deception and other violation of the law. Santilli's isodual mathematics will be identified below.

As indicated in the Foreword, Santilli achieved in 1983 [3a] the first known symmetry of the generalized line element  $x^2 = x^\mu \hat{m}_{\mu\nu} x^\nu$  expressed in terms of the Minkowski-Santilli



isometric  $\hat{m} = Tm = \text{diag}(b_1^2, b_2^2, b_3^2, -b_4^2 c^2) = \text{diag.}(1/n_1^2, 1/n_2^2, 1/n_3^2, -c^2/n_4^2)$ , where  $C = cb_4 = c/n_4$ , the quantities  $n_k, k = 1, 2, 3$ , represent the shape of the object considered (an ellipsoid for diagonal isometrics) normalized to the Euclidean unit for the vacuum  $n_k = 1, k = 1, 2, 3$ , and  $n_4$  represents the density of the medium normalized to the value  $n_4 = 1$  for the vacuum. In the original paper [3a], the formulation was based on conventional fields of numbers, thus being a "deformation", the name "isotopy" being used to honor the memory of Einstein, Minkowski and Lorentz due to the preservation of their axioms.

However, subsequent to paper [3a], Santilli discovered that the original formulation was only valid as a "polaroid picture" of nature, namely, solely valid at the initial time because, under its noncanonical or nonunitary time evolution, the formulation was catastrophically inconsistent. This lead Santilli to the completion of the isotopies with the discovery in memoir [7e] of 1993 of the new iso-, geno- and hyper-numbers based on arbitrary units yet verifying all axioms of a field.

It was only following the completion of the construction of the new isomathematics that Santilli reached the first *formulation of the generalized Lorentz transformations invariant over time* that was presented for the first time at the Moscow Physical Society in memoir [5e] also of 1993. The time invariance was achieved via the lifting of the unit  $I \rightarrow I^* = 1/T = \text{diag.}(1/b_1^2, 1/b_2^2, 1/b_3^2, 1/b_4^2) = \text{diag.}(n_1^2, n_2^2, n_3^2, n_4^2)$  as the *inverse* of the lifting of the metric,  $m \rightarrow \hat{m} = Tm$ .

In turn, the above invariance lead to the discovery of the property that, contrary to popular beliefs during the 20-th century, *the conventional Poincaré symmetry is eleven and not ten dimensional*, in view of the additional one-dimensional invariance of the line element (here expressed for simplicity in terms of a constant K)  $(x^\mu m_{\mu\nu} x^\nu) \times I \equiv [x^\mu (K^{-1} m_{\mu\nu}) x^\nu] \times (KI) = (x^\mu \hat{m}_{\mu\nu} x^\nu) \times \hat{I}$  presented for the first time in paper [5e]. As expected by experts to qualify as such, a new invariance of our spacetime resulted to have fundamental novel implications for gravitation, grand unifications and other fields.

In view of the fact that, contrary to expectations, theoretical physicists are generally horrified by new mathematics (with due exceptions Einstein called "true researchers"), Santilli identified a very simple method for the construction of hadronic from quantum models and the construction of isorelativity from special relativity. It is given by the identification of isounit with a noncanonical or nonunitary transformation,  $\hat{I} = UU^+$  and then the application of such a transform to the "totality" of the quantities, operations and physical laws of the original theory.

In fact, under said isotransform the unit I of the Minkowski space is lifted into the isounit of the Minkowski-Santilli isospace  $I \Rightarrow \hat{I} = UIU^+$ , the trivial product AB of the Minkowski space is lifted into Santilli's isoproduct,  $AB \Rightarrow U(AB)U^+ = (UAU^+)(UU^+)^{-1}(UBU^+) = A'TB' = A' \hat{\times} B'$ , the exponentiation is transformed into the isoexponentiation, and Lorentz transforms are lifted into the Lorentz-Santilli isotransforms under the above identified explicit realization of the isounit as the inverse of the lifting of the metric. In this way, any needed specific model or application of isorelativity can be constructed very easily with a simple method in all needed details without excuses based on lack of knowledge of "complex new mathematics."

Santilli then constructed his isorelativity for interior dynamical problems [12-22] via :1) The adoption of the above isomathematics or its construction via the indicated simple procedure; 2) The isotopies of all symmetries of special relativity; and 3) The isotopies of all

axioms of special relativity. A fundamental point of this lawsuit is that Santilli has been the unquestionable first scientist to discover his isomathematics, the unquestionable first scientist to construct all isotopies of the symmetries of special relativity and the unquestionable first scientist to construct the isotopies of the axioms of special relativity, as it will be proved to this Honorable Court by experts testifying under oath. Opposing views are expected to present clear documents under oath to prevent criminal prosecution.

Following the achievement of the applicable formulation of Lie's theory, Santilli was the first to discover the isotopic lifting of "all" structural aspects of special relativity, including: the first lifting in 1983 of the Minkowski space and of the the Lorentz symmetry in its classical [3a] and operator form [3b]; the first lifting of the rotational symmetry in [3c]; the first lifting of the spin symmetry [3d]; ; the first lifting of the Poincare' symmetry [3f]; the first lifting of the spinorial covering of the Poincaré symmetry [3e]; the first lifting of the Minkowskian geometry [3i]; and the first application of the preceding liftings to the EPR argument, local realism and all that [7j] (see [3l] and [22] for reviews).

Santilli isomathematics bypasses the theorems of catastrophic inconsistencies because any noncanonical or nonunitary transform  $UU^+ \neq I$  can always be rewritten  $W = UT^{1/2}$  in which case it verifies the isocanonical or isounitary law  $UU^+ = W \hat{\times} W^+ = W^+ \hat{\times} W = \hat{I}$  where the product is, of course, isotopic,  $W \hat{\times} W^+ = WTW^+$ . Consequently, relativistic hadronic mechanics in general, and Santilli isospecial relativity in particular, verify the fundamental invariances  $\hat{I} \Rightarrow (\hat{I})' = W \hat{\times} \hat{I} \hat{\times} W^+ \equiv \hat{I}$  and  $W \hat{\times} (A \hat{\times} B) \hat{\times} W^+ = (W \hat{\times} A \hat{\times} W^+) \hat{\times} (W \hat{\times} W^+)^{-1} \hat{\times} (W \hat{\times} B \hat{\times} W^+) = A' \hat{\times} B' = A'TB'$ , where one should note *the preservation over time of the numerical value of the unit and of the product, as in special relativity.*

*Unlike the case for "deformations", "Santilli isotopies of Lorentz transformations and special relativity" do indeed preserve over the numerical value of the speed of light within physical media  $C = c/n$ . In fact, the isotransformations  $A(t) = W(t) \hat{\times} A(0) \hat{\times} W(t)^+$  are isocanonical or isounitary  $W \hat{\times} W^+ = W^+ \hat{\times} W = \hat{I}$ , in which case they do preserve the Minkowski-Santilli isometric,  $\hat{m} = Tm = \text{diag}(b_1^2, b_2^2, b_3^3, -b_4^2 c^2) = \text{diag.}(1/n_1^2, 1/n_2^2, 1/n_3^2, -c^2/n_4^2) \Rightarrow \hat{m}' = W \hat{\times} m \hat{\times} W^+ \equiv \hat{m}$  and, consequently they do preserve the value  $C = c/n$  over time under the same conditions, contrary the case of plagiarizing and fraudulent works [37].*

The isotopies of the axioms of special relativity were first constructed by Santilli in memoirs [6] of 1988, then presented in a comprehensive way in monographs [14] of 1991. A crucial point of this lawsuit is that all these publications predate 1992, the year of initiation of plagiarism, fraud and deception by defendants Cardone, Mignani and marrani that lead to legal action.

The isotopies, namely, *broader realizations* of the original Einsteinian axioms, rather than dealing with new axioms, here expressed for simplicity in the two-dimensional space (3.4) (see monograph [14-22] for the general treatment) can be written as follows:

ISOAXIOM I: The maximal causal speed within physical media is given by  $V_{max} = c(b_4/b_3) = c(n_3/n_4)$ .

ISOAXIOM II: The addition of speeds within physical media follows the isotopic law  $V_{tot} = (v_1 + v_2)/[1 + (v_1 n_4^2 v_2)/(c n_3^2 c)] = (v_1 + v_2)/[1 + (v_1 b_3^2 v_2)/(c b_4^2 c)]$ .

ISOAXIOM III: The isodilation of time and the space isocontraction within physical media follow the isotopic laws  $t' = \hat{\gamma}t, L' = L/\hat{\gamma}$ , where  $\hat{\gamma} = 1/(1 - \hat{\beta}^2)^{1/2}, \hat{\beta} = v_3/V_{max} =$

$v_3 b_3 / c b_4 = (v_3 / n_3) / (c / n_4)$ . Note that  $v_3$  is always smaller than or equal to  $V_{max}$  in exactly the same ways as it happens in special relativity, nor it can be otherwise since isotopies preserves basic laws. Hence,  $\hat{\gamma}$  cannot assume imaginary values, contrary to fraudulent views expressed in plagiarizing works [37].

ISOAXIOM IV: The isodoppler law within physical media is given by the expression (for the simple case of null aberration)  $\omega' = \omega / \hat{\gamma}$ .

ISOAXIOM V: The mass-energy isoequivalence within physical media follows the isotopic law  $E = m V_{max}^2 = m c^2 n_3^2 / n_4^2 = c^2 b_4^2 / b_3^2$ .

Note that Santilli isorelativity in general and its isoaxioms in particular, recover the corresponding aspects of special relativity identically and uniquely when motion returns to be in empty space. The validity of isorelativity within physical media has been verified in classical mechanics, particle physics, nuclear physics, superconductivity, chemistry and astrophysics [12-22].

One among several classical verifications is given by the consistent treatment of light propagating within transparent media such as water (see review [14] and original works quoted therein). In this case, special relativity is "inapplicable" in water (rather than "violated" because not conceived for that scope) because within such a medium electrons can propagate faster than the local speed of light  $C = c/n = 2c/3$ . The assumption of the speed of light in water  $C = c/n$  as the maximal causal speed causes the violation of the principle of causality. The assumption of the speed of light  $c$  "in vacuum" as the maximal causal speed "in water" to salvage causality causes the violation of the basic axiom of the relativistic addition of two light speeds that does not yield the maximal causal speed as requested for consistency, resulting in the indicated inapplicability of special relativity.

These inconsistencies are readily resolved by Santilli isorelativity [14], Recall that water is isotropic and homogeneous, thus demanding that  $n_3 = n_4$ , in which case the maximal causal speed in water is  $c$  from Isoaxiom I. This permits the verification of causality, namely, to avoid that ordinary electron travel in water faster than the maximal causal speed. The isorelativistic sum of speeds, Isoaxioms II, is also valid, because it applies for the maximal causal speed, and not for locally varying speeds such as that of light in water.

It should be indicated that, in the a-scientific dream of maintaining the validity of special relativity under conditions it was not conceived for, organized interests on Einsteinian doctrines proffer the validity of the relativity also within water via the claimed reduction of light to photons scattering among atoms, thus propagating in vacuum at the speed  $c$ . These views have been qualified in refereed publications as being political manipulations of science for personal gains due to various reasons, such as:

1) radio waves with, say, one meter in wavelength, cannot be credibly reduced to photons just to serve personal gains;

2) the propagation of electromagnetic waves faster than the speed  $c$  in vacuum in vacuum, even though generally ignored (or dubbed as only occurring for the phase velocity) for personal gains by corrupt scientists, is today an experimental routine, in which case the reduction of light to photons scattering among atoms is non-scientific non-sense because that reduction only allows  $c$  as the maximal causal speed; and

3) physical media are generally opaque to light in which case any claim of the continued validity of special relativity is vulgar scientific corruption that should be prosecuted in criminal court when ventured under public support, because severely damaging human knowledge

for sinister personal gains.

At any rate, the first statement that the speed of light in vacuum  $c$  is a "universal constant" valid throughout the universe is a vulgar scientific corruption, particularly when proffered by experts, to be prosecuted in court because it implies that the speed  $c$  is also valid in the interior of the stars, quasars and black holes, with the resulting value of the energies for these bodies  $E = mc^2$ , the resulting theology of dark matter (intentionally proposed to salvage Einstein theories in the interior of astrophysical bodies), while the serious scientific position is that "we do not know".

One among several verifications of Santilli isorelativity in particle physics is given by the Bose-Einstein correlation (see review [17,22] and original works quoted therein, including works by the defendants, as well as numerous additional experimental verifications). In this case, the fit of the experimental data via special relativity requires the use of "four" unknown parameters in direct violation of the basic axiom of expectation values that, for the applicable two point correlation function, admits a maximum of "two" parameters. The use of the Lorentz-Santilli isosymmetry permits instead an exact and time invariant representation of experimental data in which  $n_k, k = 1, 2, 3$ , characterize the semi-axes of the elongated proton-antiproton fireball and  $n_4$  provides a measurement of the density of the fireball normalized to the value  $n_4 = 1$  for the vacuum.

One among several verifications of Santilli isorelativity in astrophysics is given by an exact representation of the large numerical differences existing in cosmological redshifts between a galaxy and a quasar when proved to be physically connected according to gamma spectroscopy and other evidence (see again [17,22] for reviews and original references including the quotation of work by defendant Mignani who applied 'Santilli Lie-isotopic lifting of special relativity [45] as recalled in the Foreword). said large difference is merely due to the fact that light travels the immense quasar chromospheres at much reduced speed than that in vacuum, thus exiting said chromospheres at a value of the Doppler-Santilli isoredshift much bigger than the corresponding one for light emitted by the connected galaxy.

Note that in Santilli isorelativity the speed of light is not, in general, the maximal causal speed with the sole exception of motion in vacuum (where the two speeds trivially coincide). This new axiomatic vista resulted to be necessary, first of all, to have a maximal causal speed applicable also to opaque media, but also for the resolution of the inconsistencies of special relativity when applied within physical media transparent to light.

The most important function of Santilli isorelativity has been the prediction and quantitative treatment of new clean energies and fuels so much needed by mankind due to the increasingly cataclysmic climactic events. First, we have the prediction, experimental verification and industrial development of a new chemical species, today called "Santilli magnecules" to distinguish them from the conventional molecules, which new species has permitted the synthesis of fuels having a full combustion, thus alleviating said environmental problems (see book [19] for a review and original references quoted therein and website [www.magnegas.com](http://www.magnegas.com)).

In regard to the needed new clean energy, the neutron represent, by far, one of the biggest reservoirs of clean energy available to mankind because the neutron is unstable (when in vacuum and in certain nuclei), and decays via the release of an easily tappable, very energetic electron plus the innocuous neutrino (assuming that it exists). Since the neutron is naturally unstable, it must admit a mechanism for its stimulated decay that would allow the

utilization of its clean energy. Such a stimulated decay is strongly dismissed and its study vigorously opposed by various "scientists" on grounds that special relativity and quantum mechanics do not allow it. But these disciplines were not conceived for dynamics within the hyperdense medium inside the neutron, hence qualifying said opposition as scientific corruption particularly when compared to the support of other equivocal research. Santilli isorelativity and hadronic mechanics were conceived, constructed and verified for dynamics within the hyperdense medium inside the neutron and they predict indeed the capability of stimulating its decay. This prediction has already been preliminarily confirmed but must be proved or disproved in a final form to prevent crime against society in view of the alarming environmental problems facing mankind, particularly when compared to large investment for various particle experiments without any hope of any possible value for society.

Additionally, Santilli's isorelativity predicts means for the stimulated decay of radioactive nuclear waste that could be employed within the pools of existing nuclear reactors, of course, if seeded within a responsive financial and academic environment. This possible advance, if implemented in a responsible society, would render nuclear energy environmentally acceptable because nuclear power plants would be able to recycle their nuclear waste by triggering their decay. For the non expert we recall that special relativity does not allow the variation of the meanlives of unstable nuclei because that would require the violation of its pillar, the Poincare' symmetry. By comparison, the covering Poincare'-Santilli isosymmetry and isorelativity do allow a variable meanlife, because shapes are rigid only for the politics surrounding Einsteinian doctrines while they are deformable in the physical reality. The latter feature is represented by isorelativity via the locally varying parameters  $n_k, k = 1, 2, 3$ , predicting a largely elongated ellipsoidal shape under which any perturbation, such as proton excesses due to neutron stimulated decay and other means, said nuclei could not survive. By comparison, special relativity is historically incompatible with extended shapes and their deformation, since the latter would cause the violation of the rotational symmetry, as experts are expected to know and admit to qualify as such (see [www.recyclingnuclearwaste.org](http://www.recyclingnuclearwaste.org) for more details).

## GRAVITATIONAL IMPLICATIONS

Jointly with the isotopies of special relativity, santilli also studied the isotopies of general relativity [21], but he had to abandon them because the representation of gravity on a Riemannian space is afflicted by catastrophic inconsistencies [36] usually ignored for political gains. Any time evolution of general relativity is strictly noncanonical, thus activating the theorems of catastrophic inconsistencies [so,36]. Additionally, Riemannian metrics cannot be invariant under the time evolution of the theory,  $g(x) \Rightarrow WgW^+ = g'(x'), g' \neq g$ , thus implying that curvature, and therefore gravitational attraction, change in time for the same masses at the same distance but at different times, a feature suppressed by organized interests on Einsteinian doctrines. At any rate, curvature cannot explain a central graviutational event, thje free fall of objects along a *straight* radial line. Following additional laborious studies Santilli discovered that a formulation of two relativities is not needed because gravitation is fully included in his isorelativity. This explains the single formulation "isorelativity", rather than having two formulations, "isospecial" and "isogeneral" relativities. As a matter of fact, a primary function of isorelativity is that of providing a geometric unifications of general relativity with the axioms of the special, as a condition to avoid catastrophic

inconsistencies.

This important feature is due to the fact that Santilli's isotopies leave unaffected the functional dependence of the isounit. Consequently, all Riemannian line elements are a particular case of the general isoinvariant. In fact, any given Riemannian metric with signature (+, +, +, -) can be written  $g(x) = T(x)m$  where  $T(x)$  is a  $4 \times 4$  matrix including all gravitational features, and  $m$  is the conventional Minkowski metric. The use of the gravitational isounit  $I(x) = 1/T(x)$  then allows a full representation of gravitation via the Minkowski-Santilli isogeometry [5i] since the latter admits the same machinery of the Riemannian geometry, such as covariant derivatives, Christoffel symbols, etc., trivially, because the isominkowskian metric  $\hat{m}(x) = T(x)m$  now carry a dependence on spacetime coordinates. This implies the identical reformulation of the Einstein-Hilbert gravitational field equations on isominkowski spaces over isofields.

The implications of the isominkowskian reformulation of gravity are dramatic and cannot be reviewed in detail here [22]. We merely mention that: said reformulation eliminates curvature in the description of gravity (since the Minkowski-Santilli isospaces are flat as the conventional Minkowski space); gravitation admits for the first time an "invariance", that under the Poincare'-Santilli isosymmetry, rather than the usual covariance; these features permit the resolution of the catastrophic inconsistencies [36]; and, in turn, the latter has permitted the first known axiomatically consistent, operator formulation of gravity and grand unification of electroweak and gravitational interactions, although only following the proper addition of antimatter [22].

## LIMITATIONS OF EINSTEINIAN THEORIES FOR ENERGY RELEASING PROCESSES

All energy releasing processes are irreversible over time, namely, their time reversal image violates the laws of causality. For instance, the time reversal image of the combustion of fossil fuels would require that smoke and ashes *spontaneously* reconstruct the original fuel, a physical impossibility. However, special relativity and quantum mechanics are structurally reversible in time, in the sense that their mathematics has no time arrow and all known Hamiltonian are indeed time reversal invariants. Consequently, any denial of the limitation of special relativity and quantum mechanics for energy releasing processes is nonscientific. On serious scientific grounds we can discuss the applicable *broadening* of conventional doctrines for energy releasing processes, but not their need.

On historical ground, the above limitations of special relativity and quantum mechanics is a de facto confirmation of their historical value. In fact, the disciplines were constructed for the description of [processes that are indeed time reversal invariant, such as the trajectory of an electron in an atomic structure. However, when the same discipline are applied to irreversible processes, a number of inconsistencies emerge. Consider, for instance, the synthesis of two nuclei into a third one,  $N_1 + N_2 \Rightarrow N_3$  plus energy. In this case, Santilli's graduate students have proved, via the use of relativistic quantum mechanics, the existence of a finite probability of the *spontaneous* inverse nuclear decay  $N_3 \Rightarrow N_1 + N_2$  less energy, that is in dramatic disagreement with nature.

This lawsuit has been filed because any obstruction against qualified studies of the *limitations* of Einsteinian doctrines, and against the laborious search for their appropriate generalizations is a threat to society in view of the need for new clean energies and fuels. In

particular, this lawsuit has been filed against Cornell University because with their conduction of the arXiv they do indeed oppose this fundamental research need.

The broader *genorelativity*, namely, the extension of isorelativity to irreversible processes under open conditions, has been proposed by Santilli without any claim of uniqueness in the hope of stimulating research in this basic need. This broader relativity has indeed been conceived and constructed to be *structurally irreversible*, that is, to be irreversible for all possible reversible Hamiltonians, as a necessary condition to avoid the above inconsistencies. In particular, this structural irreversibility was embedded in the *new mathematics* underling its construction and application, *Santilli genomathematics*. Still in turn, the structural irreversibility was implemented at the ultimate level of quantitative science, via *two different basic units*, one for motion forward in time  $I^>$  and the second for motion backward in time  $<I$ . All these aspects, with some initial applications, can be studied in memoir [35] recently published by the Italian Physics Society. Extensive presentations are available in monographs [22]. Industrial applications are under way thanks to substantial investments by the industry.

### LIMITATIONS OF EINSTEINIAN DOCTRINES FOR ANTIMATTER

Antimatter had yet to be discovered at the time of the inception of special relativity. Therefore, it should not be surprising that special relativity has serious limitations for the *classical* representation of antimatter. For instance, special relativity has no classical differentiation whatever between neutral matter and antimatter and even for the description of a classical antiparticle, its operator image following quantization is that of a particle with the wrong sign of the charge and definitely not that of a charge conjugated antiparticle.

The limitations of general relativity for antimatter are even more severe than those for special relativity, trivially, because of the absence of a consistent operator formulation of gravity when represented with curvature. hence, any claim that "antigravity (as the gravitational repulsion) between matter and antimatter does not exist because not predicted by Einstein theories" should be prosecuted in court, particularly when proffered under public financial support.

Santilli addressed these limitations and, without any claim of uniqueness, proposed their solution via a yet *new mathematics*, today known as *Santilli isodual conventional, iso-, geno- and hyper-mathematics* characterized by an anti-Hermitean transforms of conventional, iso-, geno and hyper-mathematics, such as the following one for an arbitrary operator  $A \Rightarrow A^d(x, \dots) - -A^+(-x^+, \dots)$ . These isodual mathematics permitted a fully consistent representation of antimatter at the classical level that verifies all known experimental data. At the operator level, isoduality turned out to be equivalent to charge conjugation, with consequential verification of experimental data at the operator level too, as interested reader can see in monograph [21] and quoted original works.

The above studies permitted the resolution of a large scientific imbalance of the 20-th century, the treatment of matter at all levels, from Newton to second quantization, while antimatter was solely treated at the level of second quantization. In fact, isodual theories of antimatter apply at all levels, of course, under isoduality, from the isodual Newton-Santilli equations to isodual second quantization (that coincides with conventional treatment).

In turn, these advances permitted the first axiomatically consistent grand unification of gravitation and electroweak interaction inclusive of antimatter, presented for the first time at the Marcel Grossman Meeting in Gravitation of 2002 (see [21] and large original literature).

Additionally, the studies predict, apparently for the first time, the possibility of quantitative studies as to whether a far away galaxy or quasar is made up of matter or of antimatter since the *isodual photon*, namely, the photon emitted by antimatter, is predicted to have features different than the ordinary photon, e.g., to experience gravitational repulsion in the gravitational field of matter and other new, experimentally detectable features [21].

## CONCLUSION

It is hoped that these guidelines for a rather vast and specialized body of research have provided all necessary evidence for expert eyewitnesses to testify that the "deformed special relativity, Minkowski space and Lorentz symmetry" presented in various works by defendants Cardone, Mignani and Marrani, are in fact:

I) *Identical*, on grounds of derivation, equations and symbols, to the early formulations by Santilli [3a], those on conventional fields of numbers;

II) *Catastrophically inconsistent*, because constituting noncanonical or nonunitary formulations treated via the mathematics of canonical or unitary theories, and

III) *Disrespectful* of the memory of Einstein, Minkowski and Lorentz, because they do not emphasize the "isotopic", that is, their character of preserving the original historical axioms completely unchanged and merely presenting broader realizations.

Opposing views by experts are suggested to be backed by quantitative treatments (that is, with formulae, rather than mere academic parlance) and proper documentation, because the condition of our planet is such to require the termination of academic politics with whatever means, and the implementation of scientific ethics, decency, democracy and accountability, particularly when operating under public financial support, as the only possible way for a collegian resolution of our serious environmental problems.

## REFERENCES

[1]. [a] H. A. Lorentz, Amst. Proc. **6**, 809 (1904) [1a]; [b] H. A. Lorentz, *Versuch einer Theorie der Elektrischen und Magnetischen Erscheinungen in bewegten Körpern*, Leyda (1895) [1e]; [c] W. Pauli, *Theory of Relativity*, Pergamon Press, (1958) [1f]

[2]. [a] R. M. Santilli, Imbedding of Lie algebras in nonassociative structures, Nuovo Cimento Vol. 51, 570-576 (1967) Seminar given at the ICTP, Trieste, Italy. Paper nominated by the Estonian Academy of Sciences (1989) as signaling the birth of Lie-admissible algebras in physics [b] R. M. Santilli, Flexible mutation algebras, Contributed paper to the Indiana Symposium on Analytic Methods in Mathematical Physics (1968) [c] E. M. Santilli, An Introduction to Lie-admissible Algebras, Center for Theoretical Studies, University of Miami, Coral Gables, FL Supplemento al Nuovo Cimento Vol. 6, 1225-1249 (1968) [d] R. M. Santilli, Dissipativity and Lie-admissible algebras Meccanica Vol. 1, 3-11 (1969) [e] R. M. Santilli, A Lie-admissible model for dissipative plasma, with P. Roman Lettere Nuovo Cimento Vol. 2, 449-455 (1969) [f] R. M. Santilli, Haag theorem and Lie-admissible algebras, Contributed paper to the 1969 Conference at Indiana Univ., Bloomington, published in Analytic Methods in Mathematical Physics R.P. Gilbert and R.G. Newton, Editors, Gordon and Breach, New York, 511-529 (1970)

[3]. [a] R. M. Santilli, On a possible Lie-admissible covering of the Galilei Relativity



for nonconservative and Galilei form-noninvariant systems, Lyman Laboratory of Physics, Harvard University, Cambridge MA Hadronic J. Vol. 1, 223-423 (1978), and addendum Vol. 1, 1279-1342 (1978) [b] R. M. Santilli, Need for subjecting to an experimental verification the validity within a hadron of Einstein's Special Relativity and Pauli's Exclusion Principle, Lyman Laboratory of Physics, Harvard University, Cambridge, MA Hadronic J. Vol. 1, 574-902 (1978) [c] R. M. Santilli, Isotopic breaking of gauge theories Phys. Rev. D Vol. 20, 555-570 (1979) [d] R. M. Santilli, Lie-admissible structure of statistical mechanics, with J. Fronteau and A.Tellez-Arenas Hadronic J. Vol. 3, 130-176 (1979) [e] R. M. Santilli, Closed systems with nonconservative internal forces, with A.Tellez-Arenas and J. Fronteau Hadronic J. Vol. 3, 177-195 (1979) [f] R. M. Santilli, Further studies on the recently proposed test of Pauli's exclusion principle under strong interactions, with H. C. Myung Hadronic J. Vol. 3, 196-255 (1979)

[4]. R. M. Santilli, Initiation of the representation theory of a Lie-admissible algebra of operators on a bimodular Hilbert space, Hadronic J. Vol. 3, 440-506 (1979) R. M. Santilli, Status of the mathematical and physical studies on the Lie-admissible formulation as of July 1979, with particular reference to strong interactions, Department of Mathematics, Harvard University, Cambridge, MA Hadronic J. Vol. 2, 1460-2019 (1979) and addendum 3, 914099 (1980) [73] Remarks on the problematic aspects of Heisenberg/Lie/symplectic formulations Hadronic J. Vol. 3, 854-914 (1980) R. M. Santilli, Elaboration of the recently proposed test of Pauli principle under strong interactions, with C.N. Ktorides and H.C. Myung Phys. Rev. D Vol. 22, 892-907 (1980) R. M. Santilli, Experimental, theoretical and mathematical elements for a possible Lie-admissible generalization of the notion of particle under strong interactions, The Institute for Basic Research Contributed paper to the 1980 Clausthal Conference on Differential Geometric Methods in Mathematical Physics, Hadronic J. Vol. 4, 1166-1257 (1981) R. M. Santilli, Generalization of Heisenberg uncertainty principle for strong interactions, Hadronic J. 4, 642-657 (1981) R. M. Santilli, Can strong interactions accelerate particles faster than the speed of light? Nuovo Cimento Vol. 33, 145-153 (1982) R. M. Santilli, An Introduction to the Lie-admissible Treatment of Nonpotential Interactions in Newtonian, Statistics and Particle Mechanics, The Institute for Basic Research Hadronic J. Vol. 5, 264-359 (1982) Foundations of the Hadronic Generalization of Atomic Mechanics, The Institute for Basic Research Part I: Generalization of Heisenberg's and Schroedinger's Representations, Hadronic J. Vol. 5, 1194-1276 (1982) Part II: Modular-isotopic Hilbert Space Formulation of the Exterior Strong Problem, with H.C. Myung Hadronic J. Vol. 5, 1277-1366 (1982) Part III: Bimodular-genotopic Hilbert Space Formulation of the Interior Strong Problem, with H.C. Myung Hadronic J. Vol. 5, 1367-1404 (1982) R. M. Santilli, A possible, Lie-admissible, time-asymmetric model for open nuclear reactions, Lett. Nuovo Cimento Vol. 37, 337-344 (1983)

[5]. [a] R. M. Santilli, Lie-isotopic lifting of the special relativity for extended deformable particle, Lett. Nuovo Cimento Vol. 37, 545-555 (1983) [b] R. M. Santilli, Lie-isotopic lifting of unitary symmetries and of Wigner's theorem for extended deformable particles, Lett. Nuovo Cimento Vol. 3, 509-521 (1983) [c] R. M. Santilli, Lie-isotopic liftings of Lie symmetries, I: General Considerations, Hadronic J. Vol. 8, 25-35 (1985); and Lie-isotopic lifting of Lie symmetries, II: Lifting of Rotations, Hadronic J. Vol. 8, 36-51 (1985) [d] R. M. Santilli, Isotopic lifting of SU(2) symmetry with application to nuclear physics, JINR Rapid Comm.

Vol. 6, 24-38 (1993) [e] R. M. Santilli, Nonlinear, nonlocal and noncanonical isotopies of the Poincare symmetry, *J. Moscow Phys. Soc.* Vol. 3, 255-280 (1993) [f] R. M. Santilli, Recent theoretical and experimental evidence on the cold fusion of elementary particles, Communication of the Joint Institute for Nuclear Research No. E4-93-252 (1993) [g] R. M. Santilli, Recent Theoretical and experimental evidence on the apparent synthesis of the neutron from protons and electrons, *Chine J. Syst. Eng. and Electr.* Vol. 6, 177-199 (1995) [h] R. M. Santilli, Isospecial relativity as a unified formulation of the special and general relativities, Contributed paper to *New Frontiers in Relativity*, T. Gill, Editor Hadronic Press, pp. 333-358 (1996) [i] R. M. Santilli, Isominkowskian Geometry for the Gravitational Treatment of Matter and its Isodual for Antimatter, *Int. J. Mod. Phys. D* Vol. 7, 351-407 (1998) [j] R. M. Santilli, R. M. Santilli, Isorepresentations of the Lie-isotopic  $SU(2)$  algebra with applications to nuclear physics and local realism, *Acta Applicandae Mathematicae* Vol. 50, pp. 177-190 (1998) [k] R. M. Santilli, Isominkowskian representation of cosmological redshifts and the internal red-blue-shifts of quasars, in *Frontiers of Fundamental Physics*, M. Barone and F. Selleri, Editors Plenum, New York, 41-58 (1994) [l] A. K. Aringazin, Direct universality of the Minkowski-Santilli isospaces, contributed paper to *Frontiers of Fundamental Physics*, M. Barone and F. Selleri, Editors Plenum, New York, 41-58 (1994) [m] J. V. Kadeisvili, Universality of the Poincare'-Santilli isosymmetry for all locally varying speeds of light, Contributed paper in *Collection of Papers on the Lorentz Symmetry*, V. V. Dvoeglazov, Editor, Nova Publisher (1998) [4j]. [n] J. V. kadeisvili, "An introduction to the Lie-Santilli isothory", *Rendiconti Circolo Matematico Palermo, Suppl.* **42** special edition dedicated to Santilli isotopies (1996),

[6]. [a] R. M. Santilli, Isotopic Lifting of Galileo's Relativity for Classical Interior Dynamical Systems, The Institute for Basic Research, *Hadronic J. Suppl.* Vol 4A, issue no. 1, 1-153 (1988) [b] R. M. Santilli, Isotopic Lifting of Contemporary Mathematical Structures, The Institute for Basic Research, *Hadronic J. Suppl.* Vol. 4A, issue no. 2, 155-266 (1988) [c] R. M. Santilli, Isotopic Lifting of Einstein Special Relativity for Classical Interior Dynamical Systems, The Institute for Basic Research, *Hadronic J. Suppl.* Vol. 4A, issue no. 3, pp. 267-405 (1988) [d] R. M. Santilli, Isotopic Lifting of Einstein's General Relativity for Classical Interior Gravitational Problems, The Institute for Basic Research, *Hadronic J. Suppl.* Vol. 4A, issue no. 4, 407-501 (1988)

[7]. [a] R. M. Santilli, Isotopies of Contemporary Mathematical Structures, The Institute for Basic Research Part I: Isotopies of Fields, Vector Spaces, Transformation Theory, Lie Algebras, Analytic Mechanics, and Space-Time Symmetries, the Institute for Basic Research, *Algebras, Groups and Geometries* Vol. 8, 169-266 (1991) [b] Isotopies of Contemporary Mathematical Structures, The Institute for Basic Research Part II: Isotopies of Symplectic Geometry, Affine Geometry, Riemannian Geometry and Einstein's Gravitation, The Institute for Basic Research, *Algebras, Groups and Geometries* Vol. 8, 275-390 (1991) [c] Isonumber and genonumbers of dimension 1, 2, 4, 8, their isoduals and pseudoduals, and hidden numbers of dimension 3, 5, 6, 7, *Algebras, Groups and Geometries* Vol. 10, 273-321 (1993) [d] Nonlocal-integral isotopies of differential calculus, geometries and mechanics, *Rendiconti Circolo Matematico Palermo, Suppl.* Vol. 42, pp. 7-82 (1996) [e] Relativistic hadronic mechanics: Nonunitary, axiom-preserving completion of relativistic quantum mechanics, *Foundations of Physics*, vol. 27, 625-740 (1997) [f] Invariant Lie-admissible formulation of

quantum deformations, Foundations of Physics, Vol. 27, 1159-1177 (1997) Invited paper for a special issue dedicated to L. Biedernarn R. M. Santilli, Found. Phys. **27**, 625 (1997) [5a]; Found. Phys. **27**, 1159 (1997) [5b]; in *Proceedings of the VIII M. Grossmann Meeting on General Relativity*, Jerusalem, June 1997, World Scientific (1998) [5c] Found. Phys. Letters **4**, 307 (1997) [5d]; in *Modern Modified Theories of Gravitation and Cosmology*, E. I. Guendelman, editors, Hadronic J. **21**, 113 [5e]; Intern. J. Modern Phys. D **7**, 351 (1998) [5f]; Found. Phys. Letters **10**, 305 (1997) [5g]; contributed paper in the *Proceedings of the Eight Marcel Grossmann Meeting in Gravitation*, T. Piran, and R. Ruffini, Editors, World Scientific, pages 473-475 (1999) [5h]; Annales Fondation L. de Broglie, **29**, 953 (2004) [5i]. Intern. J. Modern Phys. A **14**, 2205 (1999) [5j]. R. M. Santilli, Comm. Theor. Phys. **3**,153(1993) [5k]; Hyperfine Interactions, **109**, 63 (1997) [5l]. *Intern. J. Modern Phys. A* **14**, 2205 (1999) [4m].

[8]. [a] R. M. Santilli, Lie-isotopic generalization of the Poincare symmetry ICTP preprint IC/91-45), (1991) [b] R. M. Santilli, Theory of mutation of elementary particles and its application to Rauch's experiments on the spinorial symmetry, ICTP preprint IC/91-46 (1991) [c] R. M. Santilli, Apparent consistency of Rutherford's hypothesis on the neutron structure via the hadronic generalization of quantum mechanics, ICTP preprint IC/91-47 (1991) [d] R. M. Santilli, Inequivalence of the interior and exterior dynamical problems ICTP preprint IC/91-258, (1991) [e] R. M. Santilli, Closed systems with nonhamiltonian internal forces, ICTP preprint IC/91-259, (1991) [f] R. M. Santilli, Generalized two-body and three-body systems with nonhamiltonian internal forces, ICTP preprint IC/91-260 published (1991) ) [g] R. M. Santilli, Rotational-isotopic symmetries, ICTP preprint IC/91-261 (1991) [h] R. M. Santilli, Euclidean-isotopic symmetries, ICTP preprint IC/91-262 (1991) [i] R. M. Santilli, Galilei-isotopic symmetries, ICTP preprint IC/91-263 (1991) [j] R. M. Santilli, Galilei-isotopic relativities, ICTP preprint IC/91-264 (1991) [k] R. M. Santilli, The notion of nonrelativistic isoparticle, ICTP preprint IC/91-265 (1991) [l] R. M. Santilli, Lie-admissible structure of Hamilton's original equations with external terms, ICTP preprint IC/91-266 (1991)

[9]. [121] R. M. Santilli, Nonlocal Formulation of the Bose-Einstein Correlation within the context of Hadronic Mechanics, Hadronic J. Vol. 15, Part I: 1-50 and Part II: 77-134 (1992) [122] Use of hadronic mechanics for a characterization of the shape of the proton, with M. Nishioka Physics Essays Vol. 5, 44-46 (1992) [123] On a possible non-Lorentzian energy-dependence of the Kos lifetime, with F. Cardone and R. Mignani J. Phys. G: Nucl abd Part. Phys. Vol. 18, L61-L65 (1992) [124] Lie-isotopic energy-dependence of the Kos lifetime, with F. Cardone and R. Mignani, J. Phys. G: Nucl. and Part. Phys., Vol. 18, L141-L146 (1992) [125] Proposal to measure the possible redshift of light through planetary atmospheres, IBR preprint IB-DE-TP-92-7, unpublished (1992) [126] Isotopies of generalized structurable algebras, with N. Kamiya Contributed paper for the International Conference in honor of Lie and Lobachevski, Tartu, Estonia (1992) [127] Nonlinear, nonlocal and non-canonical isotopies of the Poincare symmetry, J. Moscow Phys. Soc. Vol. 3, 255-280 (1993) [128] Recent theoretical and experimental evidence on the cold fusion of elementary particles, Communication of the Joint Institute for Nuclear Research No. E4-93-252 (1993) [129] Isonumber and genonumbers of dimension 1, 2, 4, 8, their isoduals and pseudoduals, and hidden numbers of dimension 3, 5, 6, 7, Algebras, Groups and Geometries Vol. 10, 273-321 (1993) [130] A characterization of isofields and their isoduals, with J. V. Kadeisvili and N.

Kamiya, *Hadronic J.* Vol. 16, 169-187 (1993) ) [131] Standard isorepresentations of isotopic Q-operator deformations of Lie algebras, with S.U. Klimyk, *Algebras, Groups and Geometries* Vol. 10, 323-332 (1993) [132] Isotopic lifting of SU(2) symmetry with application to nuclear physics, *JINR Rapid Comm.* Vol. 6, 24-38 (1993) [133] Nonlocal Integral axiom-preserving isotopies and isodualities of the Minkowskian geometry, In *The Mathematical Legacy of Hanno Rund*, J.V. Kadeisvili, Editor, Hadronic Press, pp. 383-430 (1993) ) [134] Problematic Aspects of Weinberg's nonlinear theory, with A. Jannussis and R. Mignani, *Ann. Fond. L. De Brfoglie* Vol. 18, pp. 71-389 (1993) [135] A new cosmological conception of the universe based on the isominkowskian geometry and its isodual, Contributed paper in *Analysis, Geometry and Groups, A Riemann Legacy Volume, Volume II*, H.M. Srivastava, Editor, pp. 539-612 (1993) [136] A new cosmological conception of the Universe based on the isoriemannian geometry and its isodual, in *Analysis, Geometry and Groups: A Riemann Legacy Volume, Part II* H. M. Srivastava and Th.M. Rassias, Editors Hadronic Press, pp. 539 (1994) [137] Application of isosymmetry/Q-operator deformation to the cold fusion of elementary particles, in *Symmetry Methods in Physics*, A.N. Sissakian, G.S. Pogosyan and S.I. Vinitsky, Editor, Joint Institute for Nuclear Research, Dubna, Russia (1994) [138] Isotopic lifting of Heisenberg's uncertainties for gravitational singularities, *Comm. Theor. Phys.* Vol. 3, 47-66 (1994) [139] Nonlocal isotopic representation of electron pairing in superconductivity, in *Proceedings of the VI Trilateral German-Russian-Ukraine Seminar on High Temperature Superconductivity*, V. L. Arksenov and E. I. Kornilov, Editors, JINR, Dubna, Russia, 331-333 (1994) [140] Applications of isosymmetries Q-operator deformations to the cold fusion of elementary particles, In *Proceedings of the International Workshop on Symmetry Methods in Physics*, A.N. Sissakian, G.S. Pogosyan and S.I. Vinitsky, Editors JINR, Dubna, Russia, Volume 2, 432-442 (1994) [141] Representation of antiparticles via isodual numbers, spaces and geometries, *Comm. Theor. Phys.* Vol. 3, 153-181 (1994) [142] A quantitative isotopic representation of the deuteron magnetic moment, In *Proceedings of the International Symposium* 117-126, JINR, Dubna, (1994) [143] Isominkowskian representation of cosmological redshifts and the internal red-blue-shifts of quasars, in *Frontiers of Fundamental Physics*, M. Barone and F. Selleri, Editors Plenum, New York, 41-58 (1994) [144] Antigravity, *Hadronic J.* Vol. 17, 257-284 (1994) [145] Space-time machine, *Hadronic J.* Vol. 17, 285-310 (1994) [146] Hadronic energy, *Hadronic J.* Vol. 17, 311-348 (1994) [147] Isotopies, genotopies and isodualities of Lie's Theory, Talk delivered at the International Congress of Mathematicians, Zurich, August 3-11, unpublished (1994) [148] Isotopic unification of gravitation and relativistic quantum mechanics and its universal isopoincare' symmetry, Contributed paper to *Gravity, particles and spacetime*, P. Pronin and G. Sardanashvily, Editors, World Scientific (1994) [149] An introduction to hadronic mechanics, in *Advances in Fundamental Physics*, M. Barone and F. Selleri, Editors Hadronic Press, 69-186 (1995) [150] Comments on the isotopic lifting of quark theories in *Problems in High Energy Physics and Field Theory*, 112-137 G.L. Rcheulishvili, Editor Institute for High Energy Physics, Protvino, Russia (1995) [151] Isotopic generalization of the Legendre, Jacobi and Bessel Functions, with A.K. Aringazin and D.A. Khirukin *Algebras, Groups and Geometries* Vol. 12, 255-305 (1995) [152] Nonpotential two-body elastic scattering problem, With A.K. Aringazin and D.A. Kirukin, *Hadronic J.* Vol. 18, 245-256 (1995) [153] Nonpotential elastic scattering of spinning particles, with A. K. Aringazin and D. A. Kirukin, *Hadronic J.* Vol. 18, 257-270 (1995) [154] Problematic aspects of Einstein's gravitation and their possible

resolution via Logunov's Relativistic gravitation, in Problems in High Energy Physics and Field Theory, pp. 25-68, Dedicated to H. Poincare, V.A. Petrov and S.M. Troshin, Editors, Institute for High Energy Physics, Protvino, Russia (1994) [155] Limitations of the special and general relativities and their isotopic generalizations, Chinese J. Syst. Eng. and Electr. Vol. 6, 157-176 (1995) [156] Nonlocal isotopic representation of the Cooper pair in superconductivity, with A. O.E. Animalu Intern. J. Quantum Chem. Vol. 26, 175-187 (1995) [157] Recent Theoretical and experimental evidence on the apparent synthesis of the neutron from protons and electrons, Chine J. Syst. Eng. and Electr. Vol. 6, 177-199 (1995) [158] Nonpotential two-body elastic scattering problem, with A.K. Aringazin and D.A. Kirukin, Hadronic J. Vol. 18, 245-256 (1995) [159] Nonpotential elastic scattering of spinning particles, with A.K. Aringazin and D.A. Kirukin, Hadronic J. Vol. 18, 257-270 (1995) [160] Isotopic lifting of Newtonian mechanics, Revista Tecnica Vol. 18, 271-284 (1995) [161] Isotopic lifting of quark theories with exact confinement and convergent perturbative expansions, Comm. Theor. Phys. Vol. 4, (1995), 1-23) [162] Quantum-Iso-Gravity, Comm. Theor. Phys. Vol. 4, in press (1995) [163] Isotopic lifting of quark theories, International Journal of Physics Vol. 1, 1-26 (1995) [164] Exact quark confinement and convergent perturbative series via nonlinear isotopies of strong interactions, Proceedings of the International Workshop and Conference on Quark Matter and Heavy Ion Collision, W. Khan, Editor Hadronic J. Suppl. Vol. 10, 175-203 (1995) [165] Isotopic lifting of classical and quantum mechanics, Indian J. Mathematics Vol. 37, 235-256 (1995) [166] Isotopic lifting of quark theories, Contributed paper in Problems in High Energy Physics and Field Theory, Institute for High Energy Physics, Protvino, Russia, 112-137 (1995) [167] Isotopies, genotopies, hyperstructures and their applications, with T. Vougiouklis, Contributed paper to New Frontiers in Mathematics, Vol. I, 1-48 (1995) [168] Isotopic quantization of gravity and its universal isopoincare' symmetry, Contributed paper to the Proceedings of the Seventh Marcel Grossmann Meeting in General Relativity, R.T. Jantzen, G. MacKeiser and R. Ruffini, Editors, World Scientific, 500-505 (1995) [169] Isotopies, genotopies and hyperstructures, with T. Vougiouklis in New Frontiers in Hyperstructures, T. Vougiouklis, Editor Hadronic Press, pp. 1-48 (1996) [170] An introduction to isotopic, genotopic and hyperstructural methods, for new frontiers in theoretical biology, in New Frontiers in Theoretical Biology, C.A.C. Dreismann, Editor, Hadronic Press (1996) [171] Isotopic unification of gravitation and relativistic quantum mechanics and its universal isopoincare symmetry, In Gravitation, Particles and Space-Time, (Ivanenko Memorial Volume), P.I. Pronin and J.V. Sardanashevily, Editors, World Scientific, Singapore, pp. 369-383 (1996) [172] Isotopic quantization of gravity and its universal isopoincare symmetry, In Proceedings of the VII M. Grossmann Meeting on Gravitation, R.T. Jantzen, G. Mac Keiser and R. Ruffini, Editors, World Scientific, Singapore, pp. 500-505 (1996) [173] Isotopic liftings of the Pythagorean theorem, trigonometric and hyperbolic functions, Anale Stiintifice Universitatii Ovidius Constanta Vol. 5, no. 1, pp. 113-126 (1996) [174] Magnetic fields and the gravity of matter and antimatter, Proceedings of 1995 HYMAG, Don Wade, Editor, National High Magnetic Field Laboratory, Tallahassee, Florida (1996) ) [175] Nonlocal-integral isotopies of differential calculus, geometries and mechanics, Rendiconti Circolo Matematico Palermo, Suppl. Vol. 42, pp. 7-82 (1996) [176] Geometrization of Locally varying speeds of light via the isoriemannian geometry, Anale Stiintifice Univ. Al.I. Cuza, Matematica, Vol. XLII, pp. 121-72 (1996) [177] Representation of nonhamiltonian vector fields in the coordinates of the observer via the isosymplectic geometry, Balkan Journal of Geometry and its

Applications, Vol. 1, pp. 61-73 (1996) [178] An introduction to nonrelativistic and relativistic hadronic mechanics, Contributed paper to New Frontiers in Hadronic Mechanics, T.L. Gill, Editor, Hadronic Press, pp. 1-102 (1996) [179] Isodual theory of antimatter and its prediction of antigravity, Contributed paper to New Frontiers in Hadronic Mechanics, T.L. Gill, Editor, Hadronic Press, pp. 343-416 (1996) [180] A characterization of pseudoisofields, (with N. Kamiya) Algebras, Groups and Geometries Vol. 13, pp. 283-294 (1996) [181] Isotopic lifting of Differential Geometry, Revista Tecnica Univ. Zulia Vol. 19, 69-84 (1996) [182] Isotopic lifting of analytic and quantum mechanics, Rev. Tec. Ingegn. Univ. Zulia Vol. 19, pp. 3-16 (1996) [183] Does antimatter emit a new light? Communication of the JINR, Dubna, Russia, no. E2-96-259 (1996) [184] Isotopies of local-differential geometries, Indian J. Math. Vol. 38, pp. 1-24 (1996) Isotopies of the Pythagorean theorem, Global Analysis, Differential geometry and Lie Algebras, Gr. Tsagas, Editor, Balkan Society of Geometers, Volume 1, pp. 83-94, Balkan Society of Geometers (1997) [185] Limits of applicability of the special and general relativities, Contributed paper to New Frontiers in Relativity, T. Gill, Editor, Hadronic Press, pp. 121-148 (1996) [186] Isospecial relativity as a unified formulation of the special and general relativities, Contributed paper to New Frontiers in Relativity, T. Gill, Editor Hadronic Press, pp. 333-358 (1996) [187] Does antimatter emit a new light? Contributed paper to the International Workshop on the Gravity of Antimatter and Anti-Hydrogen Atom Spectroscopy, Hyperfine Interactions Vol. 109, pp. 63-81 (1997), Invited paper [188] [130] A characterization of isofields and their isoduals, with J. V. Kadeisvili and N. Kamiya, Hadronic J. Vol. 16, 169-187 (1993) [189] Possible implications of nonlocal-integral nuclear effects for new methods of recycling nuclear waste, Proceedings of the International Symposium on Large Scale Collective Motion of Atomic Nuclei, G. Giardina, G. Fazio and M. Lattuada, Editors, World Scientific, Singapore, pp. 549-556 (1997)

[190] Invariant, directly universal, inverse isotopic problem for nonlinear, nonlocal and nonhamiltonian interior dynamical systems, rejected by Inverse Problem, unpublished [191] Problematic aspects of dissipative nuclear models, Rejected by Phys. Rev. C (1997), unpublished [192] Invariant Lie-admissible formulation of quantum deformations, Foundations of Physics, Vol. 27, 1159-1177 (1997) Invited paper for a special issue dedicated to L. Biedernarn [193] Invariant Lie-admissible formulation of dissipative nuclear models, rejected by Phys/ Rev. C (1997) [194] Isodual relativity for matter and its isodual for antimatter, Gravitation, Vol. 3, no. 2 (1997) [195] Relativistic hadronic mechanics: Nonunitary, axiom-preserving completion of relativistic quantum mechanics, Foundations of Physics, vol. 27, 625-740 (1997) [196] Isotopic Grand Unification with the Inclusion of Gravitation, Foundations of Physics Letters Vol. 10, 307-327 (1997) [197] On Winterberg's unified theory, G. Cavallero and E. Tonni, publication data unknown (1997) [198] Isotopies of Local-Differential geometries, Indian J. Mathematics Vol. 38, pp. 43-54 (1997) [199] Evidence of the isominkowskian character of the hadronic structure, with Yu. Arestov and V. Solovianov Found. Phys. Letters Vol. 11, pp. 483-493 (1998) [200] Embedding of Lie algebras in isogeneralized structurable algebras, with N. Kamiya Acta Applicandae Mathematicae Vol. 50, pp. 167-175 (1998) [201] Isorepresentations of the Lie-isotopic  $SU(2)$  algebra with applications to nuclear physics and local realism, Acta Applicandae Mathematicae Vol. 50, pp. 177-190 (1998) [202] Foundations of Hadronic Chemistry, I: Isochemical model of the hydrogen molecule, with D.D. Shillady Hadronic J. Vol. 21, pp. 507-562 (1998) [203] Ab Initio hadronic chemistry, I: Basic methods, with D.D. Shillady Hadronic J. Vol. 21, pp.

633-714 (1998) [204] Ab Initio hadronic chemistry, II: Isochemical model of the hydrogen molecule, with D.D. Shillady Hadronic J. Vol. 21, pp. 715-758 (1998) [205] Ab Initio hadronic chemistry, III: Isochemical model of the water molecule, with D.D. Shillady Hadronic J. Vol. 21, pp. 759-788 (1998) [206] Theoretical prediction and experimental verifications of the new chemical species of magneucles, Hadronic J. Vol. 21, pp. 789-894 (1998) [207] Hadronically correlated SCF treatment of Li<sub>4</sub>, a test case for correlated energy of mental clusters, with D.D. Shillady publication data unknown (1998) [208] Nuclear realization of hadronic mechanics and the exact representation of nuclear magnetic moments, Intern. J. of Phys. Vol. 4, pp. 1-70 (1998) [209] An outline of the new combustible gas AquaFuel, its energy conversions, its technologies and its applications, Hadronic Journal Supplement Vol. 12, 1-22 (1998) [210] Isominkowskian formulation of gravity, Contributed paper in the Proceedings of the International Conference on Modern Modified Theories of Gravitation and Cosmology, Ben Gurion University, Beer Sheva, Israel, June 29-30, 1997, E.I. Guendelman, Editor, Hadronic Journal Vol. 21, pp. 3- 69 (1998)[211] An introduction to AquaFuel, its energy conversion, its applications and its open problems, Hadronic J. Suppl. Vol. 13, 1-23 (1998) [212] Origin, problematic aspects and invariant formulation of q-, k- and quantum deformations, Modern Physics Letters Vol. 13, 327-335 (1998) [213] Isominkowskian Geometry for the Gravitational Treatment of Matter and its Isodual for Antimatter, Int. J. Mod. Phys. D Vol. 7, 351-407 (1998) [214] AquqFuel An example of the emerging new energies and the new methods for their treatment, Infinite Energy, Vol. 19, 72-78 (1998) [215] Foundations of hadronic chemistry, I: Isochemical model of the hydrogen molecule, Hadronic J. Vol. 21, 507-562 (1998) [216] Isominkowskian formulation of gravity and cosmology, Contributed paper to the proceedings of the International Workshop on Modern Modified Theories of Gravitation and Cosmology, E. I. Guendelman, Editor, Hadronic Press, pages 113-169 (1998) [217] Physical laws of the emerging new energies as predicted by hadronic mechanics, Infinite Energy, Vol. 22, pp. 33-49 (1998) [218] Unification of gravitation and electroweak interactions, Contributed paper in the Proceedings of the Eight Marcel Grossmann Meeting in Gravitation, T. Piran, and R. Ruffini, Editors, World Scientific, pp. 473-475 (1999) [219] Origin, problematic aspects and invariant formulation of classical and operator deformations, Intern. J. Modern Phys. A Vol. 14, pp. 3157-33206 (1999) [220] A new iso-chemical model of the hydrogen molecule, with D.D. Shillady, Intern. J. Hydrogen Energy Vol. 24, 943-956 (1999) [221] Nuclear realization of hadronic mechanics and the exact representation of nuclear magnetic moments, Communications in Math. and Theor. Phys. Vol. 2, 1-12 (1999) [222] Classical isodual theory of antimatter and its prediction of antigravity, Intern. J. Modern Phys. A Vol. 14, pp. 2205-2238 (1999) [223] Physical laws of the emerging new energies as predicted by hadronic mechanics, II: The new mechanics, Infinite Energy, Vol. 23, pp. 69-74 (1999) [224] Physical laws of the emerging new energies as predicted by hadronic mechanics, III: The structure of the neutron and new energies of Class I, Infinite Energy, Vol. 25, pp. 75-85 (1999) [225] A new isochemical model of the water molecule, with D.D. Shillady, Intern. J. Hydrogen Energy Vol. 25, pp. 173-183 (2000) [226] Direct universality of the isospecial relativity for photons with arbitrary speeds, in Photons: Old Problems in Light of New Ideas, Valery V. Dvoeglazov, Editor, Nova Science Publishers, pp. 421-442 (2000) [227] Experimental evidence of superluminal speeds, with E. Recami Hadronic J. Vol. 23, pp. 279-294 (2000) [228] Alarming oxygen depletion in the combustion of hydrogen produced via regeneration methods, Contributed paper to the

Hydrogen International Conference HY2000, Munich, Germany, September 11 to 15 (2000) <http://www.magnegas.com/technology/part4.htm> [229] Nuclear realization of hadronic mechanics and its exact representation of nuclear magnetic moments, *Comm. Math. and Theor. Phys.* Vol. 2, 1-66 (2001) [230] A study of the energy efficiency of hadronic reactors of molecular type, with A.K. Aringazin, *Hadronic Journal* Vol. 27, 273-298 (2004) [231] Structure and combustion of magnegas, With A.K. Arinmgazin, *Hadronic Journal* Vol. 27, pages 299-330 (2004) [232] Study of polycarbonyl compounds present in magnegas, with A.K. Aringazin, *Hadronic Journal* Vol. 27, pages 332-347 (2004) [233] Iso-, geno-, hyper-mathematics and their isoduals, Invited plenary talk at the International Congress of Mathematicians, Hong Kong, China, August 2002, in press in the conference proceedings [234] New problematic aspects of string current string theories and their invariant resolution, *Foundation of Physics*, Vol. 32, pages 1111-1140 (2002). [235] Iso-, geno-, hyper-mechanics for matter and their isoduals for antimatter, Invited plenary talk at the Meeting of the International Association for Relativistic Dynamics, Washington, D.C., June 2002, *Found. of Phys.* Vol. 33, 1373-1416 (2003) [236] Iso-, geno-, hyper-relativities for matter and their isoduals for antimatter, and their novel applications in physics, chemistry and biology, December 22, 2002, in press at the *Journal of Dynamical Systems and Geometric Theories*, Vol. 1, 121-193 (2003) [237] Iso-, geno-, hyper-mathematics and their isoduals constructed from open physical, chemical and biological problems, *Proceedings of the ICM Satellite Meeting in Hong Kong, Advances in Algebras*, K. P. Shum et al. Editors, pages 185-220 (2003) [238] Axiomatic inconsistencies of grand unifications and their possible isotopic resolution, *Annales de la Fondation Louis de Broglie*, Volume 29, pages 953-968 (2004) [239] A new gaseous and combustible form of water, *International Journal of Hydrogen Energy*, Volume 31, pages 1113-1128 (2006) [240] Inconsistencies theorems of general relativity and their apparent resolution via the Poincaré' Invariant isogravitation, IBR preprint TPH-03-05 (2005), *Galilean Electrodynamics* Vol. 17, Special issue 3, pp. 42-54 (2006) [241] Inconsistencies of neutrino and quark conjectures and their negative environmental implications, IBR preprint TPH-34-05 (2005), in *Proceedings of the XVIII Workshop on Hadronic Mechanics*, International Academic Press, V. Dvoeglazov, T. Gill, P. Rowlands, E. Trelle and H. Wilhelm, Editors (2006) [242] The novel controlled intermediate nuclear fusion and its possible industrial realization as predicted by hadronic mechanics and chemistry, IBR preprint TPH-09-05 (2005), *Journal Applied Sciences*, in press (2006) [243] Lie-admissible invariant representation of irreversibility for matter and antimatter at the classical and operator levels, *Nuovo Cimento B*, Vol. 121, pp 443-498 (2006) [244] Confirmation of don Borghi's experiment on the synthesis of neutrons from protons and electrons, preprint IBR-TH-003-06, submitted for publication [245] The etherino and/or the neutrino hypothesis *Proceedings of the IARD 2006 meeting*, L. Horwitz, Editor, *Foundation of Physics*, in press (2007). [246] The etherino hypothesis, IBR preprint TH-05-06, submitted for publication.

[10]. Gr. T. Tsagas and D. S. Surlas, *Algebras, Groups and Geometries* **12**, 1 and 67 (1995) and *Algebras, Groups and Geometries* **13**, 129 (1996) . D. Rapoport-Campodonico, in *New Frontiers in Physics*, T. L. Gill, editor, Hadronic Press (1996). [7c]. R. Aslaner and S. Keles, *Algebras, Groups and Geometries* **14**, 211 (1997) [7d]. S. Vacaru, *Algebras, Groups and Geometries* **14**, 225 (1997) [7e]. E. B. Lin, *Hadronic J.* **11**, 81 (1988) [7f]. C. X. Jiang, *Algebras, Groups and Geometries* **15**, 351 (1998) [7g]. E. Trelle, *Algebras, Groups*



and Geometries **15**, 299 (1998) [7h]. N. Kamiya et al, Hadronic J. **16**. 168 (1993) [7i]. J. V. Kadeisvili, Algebras, Groups and Geometries **9**, 283 and 319 (1992) [8a]; in *Symmetry Methods in Physics* (Dedicated to Smorodinsky), G. Pogosyan et al., editors, JINR, Dubna (1994) [8b]; J. V. Kadeisvili, Indian J. Appl. of Math. **25**, 7 (1995) [8c]; J. V. Kadeisvili, Math. Methods in Applied Sciences, **19**, 362 (1996) [8d]; J. V. Kadeisvili, Algebras, Groups and Geometries **13**, 171 (1996) [8e]; J. V. Kadeisvili, Acta Appl. Math. **50**, 131 (1998) [8f]; J. V. Kadeisvili, Contributed paper in *Collection of Papers on the Lorentz Symmetry*, V. V. Dvoeglazov,, Editor, Nova Publisher (1998) [8g];

[11]. S.L. Adler, Phys.Rev. **17**, 3212 (1978) [9a]. Cl.George, F. Henin, F.Mayene and I.Prigogine, Hadronic J. **1**, 520 (1978) [9b]. C.N.Ktorides, H.C.Myung and R.M.Santilli, Phys.Rev. **D 22**, 892 (1980) [9c]. G.Eder, Hadronic J. **4**, (1981) and **5**, 750 (1982) [9d]. C.Myung and R.M.Santilli, Hadronic J. **5**, 1277 (1982) [9e]. M.Nishioka, Nuovo Cimento **82A**, 351 (1984) [9h]. M.Gasperini, Hadronic J. **7**, 971 (1984) [9i]. D.Rapoport-Campodonic, Algebras, Groups and Geometries **8**, 1 (1991) [9j]. T.Gill, J.Lindesay and W.W.Zachary, Hadronic J. **17**, 449 (1994) [9k]. A.O.E. Animalu and R.M.Santilli, Int. J.Quantum Chemistry **29**, 175 (1995) [9l]. J.Ellis, N.E. Mavromatos and D.V.Napoulos in *Proceedings of the Erice Summer School, 31st Course: From Superstrings to the Origin of Space-Time*, World Scientific (1996) [9m]. Yu. Arestov et al. Found. Phys. Letters, **11**, 483 (1998) [10a]. E. Recami and R. M. Santilli, Hadronic J. **25**, 72 (1995) [10b]. A.J.Kalnay, Hadronic J. **6**, 1 (1983) [10f]. A. O. E. Animalu, Hadronic J. **17**, 379-91994) [10l]. A. O. E. Animalu and R. M. Santilli, Intern. J. Quantum Chem. **29**, 175 (1995) [10m]. R. M. Santilli, and D. D. Shillady, Intern. J. Hydrogen Energy **24**, 943 (1999) [10n]. R. M. Santilli and D. D. Shillady, Intern. J. Hydrogen Energy **25**, 173 (2000) [10o]. R. M. Santilli, Hadronic J. **21**, 789 (1998) [10q]. R. M. santilli, <http://www.magnegas.com> [10r]. M. G. Kucherenko and A. K. Aringazin, Hadronic J. **21**, 895 (1998) [10s]. A. K. Aringazin, Hadronic J. **24**, 395 (2001) [10t]. R. M. Santilli, Intern. J. Hydrogen Energy **28**, 177 (2003) [9h]. R. M. Santilli, "A new gaseous and combustible form of water, Intern. J. Hydrogen Energy, **31**, 1113 (2006) [10i]. J. Dunning Davies, "Thermodynamics of antimatter stars in santilli hadronic mechanics", Progresses in Physics, in press (2006) [10j].

[12] R. M. Santilli, "Foundations of Theoretical Mechanics, Vol. I: "The Inverse Problem in Newtonian Mechanics: (1978) [7a] and Vol. II: "Birkhoffian Generalization of Hamiltonian Mechanics" (1982) [7b] Springer-Verlag, Heidelberg-New York.

[13] R. M. Santilli, "Lie-admissible Approach to the Hadronic Structure", Vol.I: Mathematical Foundations" (1978) [8a] and Vol. II: "Theoretical Foundations" (1981) [8b], Hadronic Press, Palm Harbor, Florida.

[14] R. M. Santilli, "Isotopic Generalizations of Galileo and Einstein Relativities", Vol.I "Mathematical Foundations" (1991) [9a] and Vol. II: "Theoretical Foundations" (1991) 9b), Hadronic Press, Palm Harbor, Florida.

[15] R. M. Santilli "Elements of Hadronic Mechanics", Vol. I: "Mathematical Foundations" (1993) [10a], Vol. II: "Theoretical Foundations" (1993) [10b] Ukrain Academy of Sciences, Kiev.

[16] R. M. Santilli, "Isotopic, Genotopic and Hyperstructural Methods in Theoretical Biology", Ukrainian Academy of Sciences, Kiev (1996).

[17]R. M. Santilli, "The Physics of New Clean Energies and Fuels According to Hadronic

Mechanics, Special issue of the Journal of New Energy, 318 pages (1998).

[19] R. M. Santilli, "Foundations of Hadronic Chemistry with Applications to New Clean Energies and Fuels", Kluwer Academic Publishers, Boston-Dordrecht-London (2001).

[20] R. M. Santilli, "The Structure of the Neutron as Predicted by Hadronic Mechanics and the Possible Utilization of its Energy via its Stimulated Decay", electronic monograph available at <http://www.neutronstructure.org> (1995).

[21] R. M. Santilli, "Isodual Theory of Antimatter with Applications to Antigravity, Grand Unifications and Cosmology", Springer (2006).

[22] R. M. Santilli, "Hadronic Mathematics, Mechanics and Chemistry", Vol. I: "Isogeno and hyperformulations for matter and their isoduals for antimatter", and Vol. II: "Experimental verifications, theoretical advances and industrial applications," International Academic Press, in press, available in pdf format in the web site <http://www.i-b-r.org/Hadronic-Mechanics.htm>

[ [23] A.K. Aringazin, A.Jannussis, D.F.Lopez, M.Nishioka and B.Veljanosky, *Santilli's Lie-Isotopic Generalization of Galilei's Relativities*, Kostarakis Publisher, Athens, Greece (1980) [12b].

[24] J. V. Kadeisvili, *Santilli's Isotopies of Contemporary Algebras, Geometries and Relativities*, Second Edition, Ukraine Academy of Sciences, Kiev (1997) [12c].

[25] D. S. Sourlas and G. T. Tsagas, *Mathematical Foundations of the Lie-Santilli Theory*, Ukraine Academy of Sciences, Kiev (1993) [12d]. [26] J. Löhmus, E. Paal and L. Sorgsepp, *Nonassociative Algebras in Physics*, Hadronic Press, Palm Harbor, FL, (1994) [12e].

[27] S. Vacaru, *Interactions, Strings and Isotopies in Higher Order Anisotropic Superspaces*, Hadronic Press (1999) [12f].

[28] R. M. Falcon Ganfornina and J. Nunez Valdes, *Fundamentos de la Isoteoria de Lie-Santilli*, (in Spanish) International Academic Press, America-Europe-Asia, (2001), also available in the pdf file <http://www.i-b-r.org/docs/spanish.pdf> [12g].

[29] Chun-Xuan Jiang, *Foundations of Santilli's Isonumber Theory*, International Academic Press, America-Europe-Asia (2002), also available in the pdf file <http://www.i-b-r.org/docs/jiang.pdf> [12h].

[30] A. Jannussis, R. Mignani and R. M. Santilli, Problematic Aspects of Weinberg's nonlinear theory, , Ann, Fond. L. De Broglie Vol. 18, pp. 71-389 (1993).

[31] R. M. Santilli, Origin, problematic aspects and invariant formulation of q-, k- and quantum deformations, Modern Physics Letters Vol. 13, 327-335 (1998).

[32] R. M. Santilli, Origin, problematic aspects and invariant formulation of classical and operator deformations, Intern. J. Modern Phys. A Vol. 14, pp. 3157-332 (1999).

[33] R. M. Santilli, New problematic aspects of string current string theories and their invariant resolution, Foundation of Physics, Vol. 32, pages 1111-1140 (2002).

[34] R. M. Santilli, Inconsistencies of general relativity and their apparent resolution via the Poincare' Invariant isogravitation, Galilean Electrodynamics Vol. 17, Special issue 3, pp. 42-54 (2006).

[35] R. M. Santilli, Lie-admissible invariant representation of irreversibility for matter and antimatter at the classical and operator levels, Nuovo Cimento B, Vol. 121, pp 443-498 (2006).

[36] R. M. Santilli, Nine theorems of catastrophic inconsistencies of general relativity and their possible resolution via the Poincare' invariant isogravitation, Galilean Electrodynamics Vol. 17, Special issue 3, pages 42-61 (2006).

[37] [a] F. Cardone and R. Mignani, "Energy and Geometry, an Introduction to Deformed Special Relativity", World Scientific (2004); [b] a variety of papers listed in arXiv by defendants F. Cardone, R. Mignani and A. Marrani.

[38] R. Mignani, Hadronic Journal Vol. 5, 1120 (1982).

[39] R. Mignani, Lettere Nuovo Cimento Vol. 39, 413 (1982).

[40] H. C. Myung, R. Mignani and R. M. Santilli, Foundations of Hadronic Mechanics via an Isotopic Lifting of Dirac's Formulation of Quantum Mechanics, Hadronic J. Vol. 6, 1873-1950 (1983)

[41] R. Mignani, Nuovo Cimento Lett. Vol. 39, 413 (1984).

20. R. Mignani and R. M. Santilli, Isotopic lifting of SU(3) with integer quark charges, ICTP preprint IC/91-48 (1991).

[42] F. Cardone, R. Mignani and R. M. Santilli, On a possible non-Lorentzian energy-dependence of the Ko lifetime, J. Phys. G: Nucl & Part. Phys. Vol. 18, L61-L65 (1992).

[43] F. Cardone, R. Mignani and R. M. Santilli, Lie-isotopic energy-dependence of the Ko lifetime, J. Phys. G: Nucl. and Part. Phys., Vol. 18, L141-L146 (1992).

[44] A. Jannussis, R. Mignani and D. Skaltsas, Physics A **187**, 575 (1992).

[45] R. Mignani, Physics Essays **5**, 531 (1992).

[46] First legal action against defendants F. Cardone and R. Mignani in Italy in 1995

<http://www.scientificethics.org/Mignani-Cardone-ir00001.htm>