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**ELEMENTS OF  
HADRONIC MECHANICS**  
Volume III:  
Recent Developments, Experimental Verifications  
and Industrial Applications

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## Preface

There is no doubt that **quantum mechanics** permitted the achievement of historical advances in numerous quantitative sciences. Nevertheless, history has established that science will never admit final theories. No matter how valid any theory may appear at a given time, its structural generalization for a more adequate representation of previously unknown conditions is only a matter of time.

A theory can be claimed to be exactly valid in a given field only when it provides an *exact* and *invariant* representation of *all* experimental evidence in that field from primitive axioms without arbitrary parameters “to fix things”. Whenever *any one* of these conditions is not met, to prevent problems of scientific ethics and accountability, the theory can only be claimed to be *approximately valid* in the field considered.

Quantum mechanics can be claimed to be exact for the structure of the hydrogen atom because, in that field, the theory represented all experimental data in an exact and invariant way. However, as soon as we exist from the arena of its original conception and verification, quantum mechanics is afflicted by numerous problems, such as:

1) In **atomic physics**, quantum mechanics has not permitted an exact representation of all spectral data of the helium, with embarrassing deviations from the experimental data of heavy atoms such as the zirconium, let alone the historical inability in about one century to represent the spectral emission of the Sun.

2) In **nuclear physics**, quantum mechanics has been unable to represent the experimental data of the simplest possible nucleus, the deuteron, because of the inability to explain the spin 1 of its ground state (since quantum axioms predict that the ground state of two particles with spin 1/2 should be 0), the lack of an exact representation of the deuteron magnetic moment (due to the

historical lack of representation of about 1% despite all possible relativistic and other corrections), the inability to explain the stability of the deuteron, and other insufficiencies, with truly embarrassing deviations from experimental data of heavy nuclei.

3) In **superconductivity**, quantum mechanics has created a condition similar to that of atomic physics prior to the representation of the structure of atoms, since quantum mechanics cannot explain the bond of the two identical electrons in the Cooper pair, thus resulting in a description of an *ensemble* of Cooper pairs without a true description of their structure.

4) In **chemistry**, quantum mechanics has been unable to provide an exact representation of the binding energy of the simplest molecule, the hydrogen molecule (due to the historical 2% missing when using unadulterated quantum axioms), with embarrassing deviations when passing to more complex molecules such as water, due to the fact that electric and magnetic moments are predicted with the wrong sign, let alone large numerical deviations, while adulterations of the basic axioms to improve the approximation, such as the so-called “screenings of the Coulomb law”, imply the abandonment of the very quantum of energy, let alone structural departures from the original axioms.

5) In **biology**, any claims of exact validity of quantum mechanics constitute one of the biggest scientific deceptions in history because, as experts are expected to know to qualify as such, quantum treatments imply that biological structures are perfectly rigid, perfectly reversible in time and perfectly eternal, as it is typically the case for crystals.

There is no doubt that **special relativity** also permitted the achievement of historical advances during the 20-th century, as illustrated by particle accelerators. However, the widespread claim of its universal and exact validity is a political posture deprived of serious experimental support.

Special relativity can be claimed to be exact for the conditions of its original conception and experimental verifications, point-like particles and electromagnetic waves *moving in vacuum*. Whenever departing from these original conditions, numerous shortcomings occur.

In fact, special relativity has been proved to prohibit a *classical* representation of antimatter in a way compatible with quantum treatments, thus eliminating from the field of its validity what may well result to be half of the entire universe, as reviewed in detail in Chapters 1 and 2.

Moreover, special relativity has been proved to be unable to represent interior systems (i.e., *extended* objects and electromagnetic waves moving within *physical media* due to nonpotential and other non-Einsteinian effects studied in detail in this volume), thus eliminating on strict scientific grounds from the

field of validity of special relativity all bound states of extended particles at short mutual distances, such as in the structure of hadrons, nuclei, molecules and stars.

Finally, the well known claim of “universal constancy of the speed of light” has been proved to be at best a philosophical abstraction, since it is now well known that *the speed of light is a local variable depending on the characteristics of the medium in which it propagates*.

As shown in detail in Chapters 1 and 3, the speed of light is smaller than that in vacuum when traveling within media of low density (as it is the case for long radio waves traveling in atmosphere for which photon treatments are meaningless and do not represent numerically the decrease of the speed in any case), and acquires values bigger than that in vacuum when traveling within physical media of high density, such as those in the interior of hadrons, nuclei and stars, thus confirming the lack of validity of special relativity within bound states of extended particles at short mutual distances established by other evidence (see again Chapters 1 and 3).

In any case, German experimentalists have transmitted an entire Beethoven symphony via electromagnetic waves traveling between certain guides at a speed bigger than that in vacuum, an accomplishment that continues to be studiously ignored by organized interests on Einsteinian doctrines, evidently, to their own detriment.

As shown in Chapters 1 and 3, **general relativity** has been afflicted by an ever increasing plethora of problematic aspects and sheer inconsistencies that have grown in time to such an extent to be formulated via rigorously proved “theorems of catastrophic inconsistencies” that continue to be studiously ignored by organized interests in the field, also to their own detriment.

Until the end of the 20-th century there has been a general tolerance of organized academic interests intent in preserving the exact validity of quantum mechanics, special relativity and general relativity for all conditions existing in the universe via the discrediting of qualified research for their generalization, via abuses of academic power and other means.

However, during the last part of the 20-th century it became evident that said organized academic interests on pre-established doctrines constitute a genuine threat to society unless contained.

The first historical case occurred in the late 1970s when the U. S. Military elected to terminate the conduction of primary military research by academia, a decision that led to the formation of ERDA, to be followed later by the current U. S. Department of Energy.

No serious physicist can express doubts on the fact that the research conducted by the U. S. Military in their own laboratories during the past three decades is dramatically more advanced than that conducted by U. S. academia precisely in view of the removal in military circles of any restriction for the

research to be strictly compatible with Einsteinian doctrines and quantum mechanics.

It is little known that, a few decades later, various U. S. corporations have followed research policies similar to those adopted by the U. S. military, namely, of conducting research beyond Einsteinian doctrines and quantum mechanics without any public disclosures of the used theories and solely disclosing the industrial results, as the author can personally attest.

The above policy by U. S. corporations (and perhaps others around the world) is enforced, in particular, in industrial research on new energies and fuels, all requiring the necessary surpassing of Einsteinian doctrines and quantum mechanics for genuine advances, as we shall indicated in this monograph.

An illustration of diverging research interests between academia and industry is given by the production of environmentally acceptable fuels via submerged electric arcs, in which the following deviations from the established doctrines of the 20-th century have been established by rigorous,, repeated measurements beyond credible doubt:

i) When the liquid feedstock is distilled water and the electrodes are given by pure graphite, quantum mechanics and chemistry predict that the produced gaseous fuel is composed of 50%  $H_2$  and 50% CO. But CO is combustible in atmosphere and its exhaust is given by  $CO_2$ . Therefore, in the event such a prediction were correct, the combustion exhaust of the fuel produced with a submerged electric arc in pure water with graphite electrodes should contain about 42% of  $CO_2$ . Numerous measurements conducted by EPA accredited automotive laboratories have established that the combustion exhaust contain only 4%-5%  $CO_2$  without an appreciable percentage of unburned CO. Consequently, *the error (in defect) by quantum mechanics and chemistry is of about ten times the experimental value.*

ii) For the same case of a gaseous fuel produced from distilled water and carbon electrodes, quantum mechanics and chemistry predicts that the thermochemical processes underlying the formation of the fuel release about 2,250 British Thermal Units (BTU) per standard cubic feet (scf). In reality, systematic measurements have established that the heat produced by said submerged electric arc is of the order of 250 BTU/scf. Therefore, *the error by quantum mechanics and chemistry is again of the order of ten times the measurements*, although the error is this time in excess. Note that deviation i) is fully compatible with deviation ii) or, equivalently, deviation ii) is a confirmation of i).

iii) Again for the case of a combustible gaseous fuel produced from distilled water via a submerged electric arc between graphite electrodes, quantum mechanics and chemistry predict that no oxygen is present in the combustion exhaust, since the prediction is that, under the correct stoichiometric ratio

between oxygen and the combustible gas (without additional gases, e.g., of atmospheric origin), the exhaust is formed by 50% H<sub>2</sub>O and 50% CO<sub>2</sub>. In reality, independent measurements conducted by EPA accredited automotive laboratories have established that, under the conditions here considered, the exhaust of said gas combustion in atmosphere contains about 14% of breathable oxygen. Therefore, *quantum mechanics and chemistry have an error of about fourteen times the measured values in the prediction of oxygen in the exhaust.*

iv) Quantum mechanics and chemistry predict that the H<sub>2</sub> component of combustible gas produced by the above submerged electric arc has the conventional specific weight of 2.016 atomic mass units (amu). Numerous tests conducted in various independent laboratories establish instead that the hydrogen content of said gas has specific weight of 14.56 amu. Therefore, in this additional case *quantum mechanics and chemistry have an additional seven-fold deviation from experimental data.*

v) Numerous additional deviations from the prediction of quantum mechanics and chemistry are established by submerged electric arcs, such as the fact that the resulting gaseous fuel has *a variable energy content, a variable specific weight, and a variable Avogadro number*, while, as it is well known, conventional gases have constant energy content, specific weight, and Avogadro number.

Deviations of the above magnitude between preferred academic theories and industrial realities illustrate the reasons for an increasing number of industries to follow the lead of the U. S. military and conduct advanced research without its full disclosure to academia.

In the hope of contributing to a containment of this unreassuring pattern, a main scope of this third volume on this series is to show that the resolution of the current environmental problems, such as:

a) the development of new clean energies based on light nuclei (as necessary to avoid the environmental problems caused by energies originating from large nuclei),

b) the recycling of nuclear waste via its stimulated decay (as necessary to avoid the now failed political attempt at its storage in the Yucca mountain in Nevada),

c) the need for new clean fuels necessarily without valence bonds (to avoid the replacement of hydrocarbons with other hydrocarbons),

all these societal needs and others crucially depend on suitable generalizations of quantum mechanics and special relativity, as well as the abandonment of the representation of gravity via curvature in favor of broader views.

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