

## INDEX - Electromagnetic mechanics of elementary particles (The Trispatial Model)

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Service de Recherche Pédagogique

- [Cliquer ici pour version française](#)
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- [Hier anklicken für die deutsche Übersetzung](#)

Research project undertaken in 1998 to demonstrate the validity of the reasoning method by perception of coherences, explained in the research project on [general neurolinguistics](#), when the properties of the multilayer neural network of the neocortex are correctly used.

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### Our Electromagnetic Universe

Hypothesis of the progressive establishment and growth of the Universe, strictly from electromagnetic considerations, as suggested by Einstein towards the end of his life. Discussion of the conflicting relations observed between the various current black holes and Big Bang theories. Discussion of the possibility of a progressive adiabatic energy increase in the universe from a hypothetical zero energy level in vacuum at the beginning of the universe, as an alternate solution to the Quantum Field Theory (QFT) postulated stable conservative zero-point energy level in vacuum. Proposal of an alternate process for the origin of the Universe grounded on an expanded space geometry emerging from Maxwell's initial interpretation of the relation between the electric and magnetic **E** and **B** fields, leading to a new perspective on the objective and subjective aspects of the time dimension.

An expanded version of an article initially published in 2016 was republished upon invitation in 2021 as a book chapter as an expanded final version under the title "*Our Electromagnetic Universe*" in book titled "*Newest Updates in Physical Science Research Vol. 12*" which is part of a collection that pre-selects papers deemed worthy of attention in the global offer, to make them more immediately available to the community.

#### - [Our Electromagnetic Universe](#)

Michaud, A. (2021) *Our Electromagnetic Universe*. In: Dr. Mohd Rafatullah, Editor. *Newest Updates in Physical Science Research Vol. 12*. 23 July 2021, Page 64-82. <https://doi.org/10.9734/bpi/nupsr/v12/11459D>

- [Notre univers électromagnétique](#)
- [Nuestro Universo electromagnético](#)
- [Unser elektromagnetisches Universum](#)

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### **The last challenge – Final version**

An expanded version of an article published in 2017 that provided an overview of the the last remaining challenge in fundamental physics was republished upon invitation in 2021 as a book chapter in a final completed version under the title “[\*The Last Challenge of Modern Physics: Perspective to concept and model analysis\*](#)” in book titled “[\*Newest Updates in Physical Science Research Vol. 4\*](#)” which is part of a collection that pre-selects papers deemed worthy of attention in the global offer, to make them more immediately available to the community:

An **Appendix A** was added to the republished version, summarizing Maxwell's synthesis of the electromagnetic equations set and introducing the first level forms of these equations that are applicable to individual elementary electromagnetic particles as extensions of Maxwell's fourth equation for electromagnetic photons and of the Lorentz force equation for elementary particles such as the electron.

**- Last Challenge of Modern Physics: Perspective to concept and model analysis**

Michaud, A. . (2021). *The Last Challenge of Modern Physics: Perspective to Concept and Model Analysis*. In: Dr. Jelena Purenovic, Editor. *Newest Updates in Physical Science Research Vol. 4*, 1–29.

**- Dernier défi de la physique moderne: Perspective en matière d'analyse des concepts et des modèles**

**- Último reto de la física moderna: Perspectiva sobre el análisis de conceptos y modelos**

**- Letzte Herausforderung der modernen Physik: Perspektive zur Konzept- und Modellanalyse**

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### **Adiabatic processes - Final version**

An expanded version of an article about adiabatic processes at the subatomic level initially published in 2016 was republished upon invitation in 2021 as a book chapter in a final version under the title “[\*On adiabatic processes at the subatomic level\*](#)” in book titled “[\*Newest Updates in Physical Science Research Vol. 4\*](#)” which is part of a collection that pre-selects papers deemed worthy of attention in the global offer, to make them more immediately available to the community.

**- On adiabatic processes at the subatomic level**

Michaud, A. (2021). *On Adiabatic Processes at the Subatomic Level*. In: Dr. Jelena Purenovic, Editor. *Newest Updates in Physical Science Research Vol. 4*, 30–62.

**- Sur les processus adiabatiques au niveau subatomique**

**- Sobre los procesos adiabáticos al nivel subatómico**

**- Über adiabatischen Prozessen auf subatomarer Ebene**

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### **De Broglie photon - Final version**

An augmented version of a seminal paper concerning the possible internal structure of localized electromagnetic photons, originally published in 2016, was republished by invitation in 2021 as a book chapter as a final version under the title “[\*De Broglie's\*](#)

[Double Particle Photon](#)" in book titled "[Newest Updates in Physical Science Research Vol. 4](#)" which is part of a collection that pre-selects papers deemed worthy of attention in the global offer, to make them more immediately available to the community.

As a tribute to the contribution of Paul Marmet to the development of the electromagnetic mechanics of elementary particles, an **Appendix A** was added to the republished version, highlighting his contribution to science and incidentally the "high esteem" that was manifested for the accomplishments of this outstanding researcher and experimentalist by his colleagues and the authorities of the *University of Ottawa*, and by the *Natural Science and Engineering Research Council of Canada*:

- **De Broglie's Double-Particle Photon**

Michaud, A. (2021). *De Broglie's Double-Particle Photon*. In: Dr. Jelena Purenovic, Editor. *Newest Updates in Physical Science Research Vol. 4*, 63–102.

- **Le photon à double-particule de de Broglie**

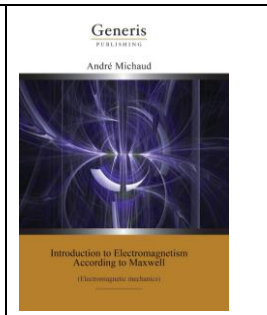
- **El fotón de doble partícula de De Broglie**

- **De Broglies Doppelteilchen Photon**

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**Final monograph**

Introduction to Maxwell's initial electromagnetics theory with deeper analysis leading to the establishment at the subatomic level of clear mechanics of electromagnetic photons emission and absorption and of electron stabilization in atoms. The resulting discovery of the adiabatic nature of the energy induced in all elementary charged particles, related to Maxwell's first equation, tends to confirm the conclusion that Einstein reached towards the end of his life that gravitation seems to follow the pattern of electromagnetism.



**Introduction to Electromagnetism According to Maxwell**

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**Maxwell's initial interpretation - Final version**

A very positive recent development has occurred regarding the three articles reproduced and completed as Chapter 1, Chapter 2 and Chapter 3 of this book, that can only hasten the re-familiarization of the community with Maxwell's initial interpretation and thus contribute to the better understanding of physical reality that it seems to favor.

The paper titled "[Electromagnetism according to Maxwell's Initial Interpretation](#)" reproduced and expanded as **Chapter 1** was chosen to be republished with a new title to account for the clearer explanation given in the book of the the reason why Einstein suspected that gravitation was related to electromagnetism, in the book titled "[New Insights into Physical Science Vol. 10](#)", which is part of a collection that pre-selects articles deemed worthy of attention from the global offering, to be put at the disposal of the community.

The original article was initially published in January 2020 in the *Journal of Modern Physics* and is referred to further on.

- **Emphasizing Electromagnetism according to Maxwell's Initial Interpretation**

Michaud, André (2020) *Emphasizing the Electromagnetism according to Maxwell's Initial Interpretation*. In: Dr. Thomas F. George, Editor. Chapter 4 In *New Insights into Physical Science Vol. 10*. West Bengal, India: Book Publisher International. 2020.

(PROMOTIONAL VIDEO)

- **Mise en évidence de l'interprétation initiale de Maxwell de l'électromagnétisme**
- **Subrayando la interpretación inicial de Maxwell sobre el electromagnetismo**
- **Hervorhebung von Maxwells ursprünglicher Interpretation des Elektromagnetismus**

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**The Hydrogen atom resonance states - Final version**

The paper titled "*The Hydrogen Atom Fundamental Resonance States*" reproduced as **Chapter 2** was chosen to be republished as a chapter of the Book titled "*New Insights into Physical Science Vol. 6*", by "*Book Publisher International*", whose aim is to provide the global academic community with works that its editors identifies as belonging to the highest level of scholarly research in the global offering. The title of this republication was changed to "*An Overview of The Hydrogen Atom Fundamental Resonance States*" due to its having been expanded to include some sections from the articles being reproduced as Chapter 1 and Chapter 3. These new sections cover the mechanics of photon emission and absorption initially published in Reference [9], object of Chapter 1, and the analysis and resolution from the trispatial perspective of the "*absolute motion / relative motion*" conundrum previously published in Reference [15].

- **Overview of the Hydrogen Atom Resonance States**

André Michaud. (2020) *An Overview of The Hydrogen Atom Fundamental Resonance States*. In: Dr. Mohd Rafatullah, editor. *New Insights Into Physical Science Vol. 6*. West Bengal, India: Book Publisher International. 2020.

(PROMOTIONAL VIDEO)

- **Vue d'ensemble des états de résonance de l'atome d'hydrogène**
- **Visión general de los estados de resonancia del átomo de hidrógeno**
- **Überblick über die Resonanzzustände des Wasserstoffatoms**

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**Gravitation, QM, Equilibrium states – Final version**

Finally, the paper titled "*Gravitation, Quantum Mechanics and the Least Action Electromagnetic Equilibrium States*" reproduced and expanded in **Chapter 3** was chosen to be republished as one of the chapters of the eBook titled "*Prime Archives in Space Research*", by *Vide Leaf Prime Archives*, whose aim is to promote scientific research in the world by making research results considered state-of-the-art available to young researchers to facilitate their application in their research practices.

## **- Gravitation, Quantum Mechanics and the Least Action Electromagnetic Equilibrium States**

Michaud, A. (2020) *Gravitation, Quantum Mechanics and the Least Action Electromagnetic Equilibrium States*. In: Amenosis Lopez, editor. Prime Archives in Space Research. Hyderabad, India: Vide Leaf. 2020.

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### **Final synthesis**

It is well established that classical electrodynamics, quantum electrodynamics (QED) as well as Quantum Field Theory (QFT) are grounded on Maxwell's wave theory and on his equations, but it is much less well understood that they are not grounded on his initial interpretation of the relation between the **E** and **B** fields, but are rather grounded on Ludvig Lorenz's interpretation of this relation, with which Maxwell disagreed.

Maxwell considered that both fields had to mutually induce each other cyclically for the velocity of light to be maintained while Lorenz considered that both fields had to synchronously peak at maximum at the same time for this velocity to be maintained, both interpretations being equally consistent with the equations. Two recent breakthroughs however now allow confirming that Maxwell's interpretation was correct because, contrary to the Lorenz interpretation, it allows to seamlessly reconcile Maxwell's electromagnetic wave theory, so successfully applied at our macroscopic level, with the electromagnetic characteristics that apply at the subatomic level to localized electromagnetic photons and to all localized charged and massive elementary electromagnetic particles of which all atoms are made, and finally allows establishing a clear mechanics of electromagnetic photon emission and absorption by electrons during their interactions at the atomic level.

#### **- Electromagnetism according to Maxwell's Initial Interpretation**

- Michaud, A. (2020) *Electromagnetism according to Maxwell's Initial Interpretation*. Journal of Modern Physics, 11, 16-80.  
<https://doi.org/10.4236/jmp.2020.111003>.

#### **- L'électromagnétisme selon l'interprétation initiale de Maxwell**

#### **- El electromagnetismo según la interpretación inicial de Maxwell**

#### **- Elektromagnetismus nach der ursprünglichen Maxwellschen Interpretation**

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### **Hydrogen atom resonance states**

Ever since Schrödinger proposed a wave function to represent the least action resonance states that electrons stabilize into in atomic orbitals, research has been unsuccessful in reconciling the Schrödinger wave function with the electromagnetic properties of electrons. This article identifies and discusses the electromagnetic harmonic oscillation properties that the electron must possess as a resonator in order to explain these resonance states, as well as the electromagnetic interactions between the elementary charged particles making up atomic structures that explain electronic and nucleonic

orbitals stability. An unexpected benefit of the expanded space geometry required to establish these properties and interactions is that the fundamental symmetry requirement is respected by structure for all aspects of the distribution of energy within electromagnetic quanta.

**- The Hydrogen Atom Fundamental Resonance States**

- Michaud, A. (2018) *The Hydrogen Atom Fundamental Resonance States. Journal of Modern Physics*, **9**, 1052-1110. doi: [10.4236/jmp.2018.95067](https://doi.org/10.4236/jmp.2018.95067).

**- Les états de résonance fondamentaux de l'atome d'hydrogène**

**- Los estados fundamentales de resonancia del átomo de hidrógeno**

**- Die fundamentale Resonanzzustände des Wasserstoffatoms**

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**Gravitation, QM, Equilibrium states**

The trispacial model proposes an alternate foundation of physical reality that establishes the ultimate foundation as a hypothetical uniform zero energy level in space at the beginning of the universe, instead of the hypothetical uniform zero-point-energy excitation level of the quantum vacuum which is the foundation of the quantum field theory (QFT).

The major difference is that instead of quantizing the interaction by means of assumed natural quantum vacuum fluctuations, this model proposes a continuous infinitesimally progressive interaction alternative that offers mechanical solutions that QFT does not provide. Namely, Maxwell equations compliant descriptions of the internal self-sustaining mutual induction of the electric and magnetic fields of the energy quanta constituting each individual localized electromagnetic elementary particle, a mechanical explanation to orbital stability in atomic structures, hints at the possibility that the methods of quantum mechanics can be applied to describing nucleons inner resonance states in a manner more satisfactory than QCD, reconciles the wave function with permanent localization of the electron captive in orbital resonance states and finally mechanically relates quantum mechanics to gravitation:

**- Gravitation, Quantum Mechanics and the Least Action Electromagnetic Equilibrium States**

- Michaud A (2017) *Gravitation, Quantum Mechanics and the Least Action Electromagnetic Equilibrium States. J Astrophys Aerospace Technol* 5: 152. doi:[10.4172/2329-6542.1000152](https://doi.org/10.4172/2329-6542.1000152)

**- Gravitation et mécanique quantique vs les états d'équilibre électromagnétique de moindre action**

**- Gravitación y mecánica cuántica vs los estados de equilibrio electromagnético de mínima acción**

**- Gravitation/Schwerkraft, Quantenmechanik und die elektromagnetischen Gleichgewichtszustände der stationären Wirkung**

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### **The last challenge**

The following paper puts in perspective the manner in which a new trispatial space geometry allows establishing a mechanics of elementary electromagnetic particles that integrates all conversion processes that are possible between electromagnetic energy and mass at the submicroscopic level, as well as the sequence of trispatial LC equations that stems from this space geometry, and clarifies how mass, velocity, pressure and charge can only be emergent properties due to the presence of kinetic energy.

#### **- The Last Challenge of Modern Physics**

- Michaud A (2017) *The Last Challenge of Modern Physics*. J Phys Math  
8: 217. doi: 10.4172/2090-0902.1000217.

#### **- Le dernier défi de la physique moderne**

#### **- El último reto de la física moderna**

#### **- Die letzte Herausforderung der modernen Physik**

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### **Adiabatic processes**

Some aspects of the model require clear understanding of the relation between the initial and irreversible adiabatic acceleration phase of newly created massive particles and the Principle of conservation of energy, and of the factors that must be taken into account to calculate the least action electromagnetic equilibrium states that determine the resonance states revealed by Quantum Mechanics. An analysis of these aspects of particle physics is carried out in the following paper:

#### **- On Adiabatic Processes at the Elementary Particle level**

(2016) J Phys Math 7: 177. doi:10.4172/2090-0902.1000177

#### **- Analyse des processus adiabatiques au niveau des particules élémentaires**

#### **- Análisis de los procesos adiabáticos al nivel de las partículas elementales**

#### **- Analyse von adiabatischen Prozessen auf der Elementarteilchenebene**

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### **First monograph**

First described in a popularization work in 1999 [2], a summary overview of this new space geometry was formally presented at CONGRESS-2000, "*Fundamental Problems of Natural Sciences*" [3], St. Petersburg State University, St. Petersburg, Russia on July 5 of 2000.

The electromagnetic mechanics that underlies this model is described in a monograph published by *Scholars' Press*, *Les Éditions universitaires européennes* y el *Editorial academia española*:



**Electromagnetic  
Mechanics  
of  
Elementary  
Particles  
Scholars'  
Press**



**Mécanique  
électromagnétique  
des particules  
élémentaires  
Éditions  
universitaire  
européennes**



**Mecánica  
electromagnética  
de las partículas  
elementales  
editorial  
académica  
española**



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### **De Broglie's double-particle photon**

The seminal considerations that gave rise to the 3-spaces model and its fundamental space geometry are detailed in the following paper, which was accepted by the reviewers and editors of the Journal of Physical mathematics as conforming to Maxwell's equations and was published in the 2016 issue No. 7 of the Journal:

**- On de Broglie's Double-Particle Photon Hypothesis**

(2016) J Phys Math 7: 153. DOI:10.4172/2090-0902.1000153

**- À propos de l'hypothèse du photon à double corpuscule de Louis de Broglie**

**- Sobre la hipótesis de Louis de Broglie respecto al fotón a partícula doble**

**- Über die Hypothese des Doppelpartikelphotons von Louis de Broglie**

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### ***Model Dependant papers***

#### **The critical sequence**

Series of model dependant papers describing a seamless series of clearly defined interaction sequences providing an uninterrupted path of causality from:

- 1) From the quantities of unidirectional (that is, translational) kinetic energy that sustain the momentum of charged and massive elementary electromagnetic particles and of their electromagnetic complement that are adiabatically induced in them by the Coulomb acceleration,
- 2) to the release as a free-moving electromagnetic photon of any quantity of this energy that becomes in excess of the precise amount allowed by some stable or metastable electromagnetic equilibrium state, for example, when an electron becomes captive of the resonance state of an atom's available orbital after having accumulated this energy now in excess while accelerating to reach this equilibrium state,
- 3) to the creation of electron-positron pairs from the destabilization of electromagnetic photons of energy 1.022 MeV or more,
- 4) to the creation of protons and neutrons from the interaction of thermal electrons and positrons forced into groups of three involving both types, in sufficiently small volumes of space, with insufficient energy to escape mutual capture,
- 5) to the final shedding in the form of neutrino energy of momentary metastable



excess mass (different from velocity related momentary relativistic mass increment) as overexcited newly created massive elementary particles are forced by local electromagnetic equilibrium states to reach their lowest possible and henceforth stable and invariant rest mass.

Note that the following series of papers should be read in sequence for the uninterrupted causality link between state 1) and state 5) to become totally clear.

Steps 1) and 2), while not being model dependant, nevertheless belong to the same interaction sequence and are described in **Sections 3** and **4** of the following paper:

**1) + 2) - The Corona Effect**

International Journal of Engineering Research and Development. e-ISSN: 2278-067X, p-ISSN: 2278-800X. Volume 7, Issue 11 (July 2013), PP. 01-09

**- L'effet Corona**

**- El efecto Corona**

**- Der Korona-Effekt**

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Before proceeding to the analysis of steps **3)**, **4)** and **5)**, it would be important to clearly understand the internal cyclic motion of the energy making up localized photons, motion that arises from Louis de Broglie's hypothesis on the double-particle photon being applied to the 3-spaces model. This motion, which was already described in the seminal paper previously mentioned, is integrated in a more detailed manner into the causality sequence in the following article:

**- Expanded Maxwellian Geometry of Space Geometry and the Photon  
Fundamental LC Equation**

International Journal of Engineering Research and Development, e-ISSN: 2278-067X, p-ISSN: 2278-800X. Volume 6, Issue 8 (April 2013), PP. 31-45.

**- La géométrie maxwellienne augmentée de l'espace et  
l'équation LC fondamentale du photon**

**- La geometría maxwelliana aumentada del espacio y la Ecuación  
LC fundamental del fotón**

**- Die erweiterte Maxwellsche Geometrie des Raums und die  
fundamentale LC-Gleichung des Photons**

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**3) - The Mechanics of Electron-Positron Pairs Creation in the  
3-Spaces Model**

International Journal of Engineering Research and Development, e-ISSN: 2278-067X, p-ISSN: 2278-800X. Volume 6, Issue 10 (April 2013), PP. 36-49.

**- La mécanique de création de paires électron-positron dans le modèle  
trispacial**

**- La mecánica de creación de pares electrón-positrón en el modelo  
tresespacial**

**- Die Mechanik der Elektron-Positron-Paarbildung im Dreiräume-Modell**

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**4) - The Mechanics of Neutron and Proton Creation in the 3-Spaces Model**  
International Journal of Engineering Research and Development. e-ISSN: 2278-067X, p-ISSN : 2278-800X. Volume 7, Issue 9 (July 2013), PP.29-53.

- **Mécanique de création de Protons et Neutrons dans le modèle trispatial**
- **Mecánica de creación de protones y neutrones en el modelo tresespacial**
- **Mechanik der Protonen- und Neutronenbildung im Drei-Räume-Modell**

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**5) - The Mechanics of Neutrinos Creation in the 3-Spaces Model**

International Journal of Engineering Research and Development. e-ISSN: 2278-067X, p-ISSN: 2278-800X. Volume 7, Issue 7 (June 2013), PP.01-08

- **Mécanique de création des neutrinos dans le modèle des 3-espaces**
- **Mecánica de creación de los neutrinos en el modelo de los tres espacios**
- **Mechanik der Neutrino-Erzeugung im 3-Räume-Modell**

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### ***Other papers – Not model dependant***

#### **The foundation**

Although not model dependant, the following papers account for all observed phenomena in light of the conclusions imposed by the 3-spaces model. They can be read in any order.

**1- Field Equations for Localized Individual Photons and Relativistic Field Equations for Localized Moving Massive Particles**

International IFNA-ANS Journal, No. 2 (28), Vol. 13, 2007, p. 123-140,  
Kazan State University, Kazan, Russia.

- **Уравнения поля для локализованных фотонов и релятивистских уравнений поля для локализованных движущихся массивных частиц**

- Also available: **Extended abstract** from the Kazan SU site.

- **Équations de champs pour photons localisés et pour particules massives en mouvement.**

- **Ecuaciones de campos para fotones localizados y ecuaciones relativistas de campos para partículas masivas en movimiento**

- **Feldgleichungen für lokalisierte Photonen und relativistische Feldgleichungen für bewegende lokalisierte massive Teilchen**

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## **2 - From Classical to Relativistic Mechanics via Maxwell**

International Journal of Engineering Research and Development, e-ISSN: 2278-067X, p-ISSN: 2278-800X. Volume 6, Issue 4 (March 2013), PP. 01-10.

- **De la mécanique classique à la mécanique relativiste via Maxwell**
- **De la mecánica clásica a la mecánica relativista vía Maxwell**
- **Von der klassischen Mechanik zur relativistischen Mechanik via Maxwell**

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## **3 - Unifying all Classical Force Equations**

International Journal of Engineering Research and Development, e-ISSN: 2278-067X, p-ISSN: 2278-800X. Volume 6, Issue 6 (March 2013), PP. 27-34

- **Unification des équations de force classiques**
- **Unificación de las ecuaciones de fuerza clásicas**
- **Vereinheitlichung aller klassischen Kraftgleichungen**

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## **4 - Deriving $\epsilon_0$ and $\mu_0$ from First Principles**

International Journal of Engineering Research and Development. e-ISSN: 2278-067X, p-ISSN: 2278-800X. Volume 7, Issue 4 (May 2013), PP. 32-39.

- **Dérivation de  $\epsilon_0$  et  $\mu_0$  à partir des principes premiers**
- **Derivación de  $\epsilon_0$  y  $\mu_0$  a partir de los principios fundamentales**
- **Herleitung von  $\epsilon_0$  und  $\mu_0$  aus Grundbegriffe**

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## **5 - On the Einstein-de Haas and Barnett Effects**

International Journal of Engineering Research and Development. e-ISSN: 2278-067X, p-ISSN: 2278-800X. Volume 6, Issue 12 (May 2013), PP. 07-11.

- **À propos des effets Einstein-de Haas et Barnett**
- **Sobre los efectos Einstein-de Haas y Barnett**
- **Über die Einstein-de Haas- und Barnett-Effekte**

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## **6 - On the Electron Magnetic Moment Anomaly**

International Journal of Engineering Research and Development. e-ISSN: 2278-067X, p-ISSN: 2278-800X. Volume 7, Issue 3 (May 2013), PP. 21-25.

- **A propos de "l'anomalie" du moment magnétique de l'électron**
- **Sobre la "anomalía" del momento magnético del electrón**
- **Über die "Anomalie" des magnetischen Moments des Elektrons**

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## **7- Proposal of an invariant mass reference for the kilogram**

### **- Proposition pour une référence de masse invariante pour le kilogramme**

The General Science Journal 2011

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## **8 - The Corona Effect**

International Journal of Engineering Research and Development. e-ISSN: 2278-067X, p-ISSN: 2278-800X. Volume 7, Issue 11 (July 2013), PP. 01-09.

**- L'effet Corona**

**- El efecto Corona**

**- Der Korona-Effekt**

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## **9 - Inside Planets and Stars Masses**

International Journal of Engineering Research and Development. e-ISSN: 2278-067X, p-ISSN: 2278-800X. Volume 8, Issue 1 (July 2013), PP. 10-33.

**- L'intérieur des masses planétaires et stellaires**

**- Dentro de las masas de los planetas y de las estrellas**

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## **10 - On the Magnetostatic Inverse Cube Law and Magnetic Monopoles**

International Journal of Engineering Research and Development e-ISSN: 2278-067X, p-ISSN: 2278-800X. Volume 7, Issue 5 (June 2013), PP.50-66.

**(Grounding Experiment)**

**- Sur la loi de l'inverse du cube et les monopôles magnétiques**

**- Sobre la ley de lo inverso del cubo y los monopolos magnéticos**

**- Das magnetostatische inverse Würfelgesetz und magnetische Monopole**

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## **11- The Birth of the Universe and the Time Dimension**

*American Journal of Modern Physics*. Special  
Issue: Insufficiency of Big Bang Cosmology. Vol. 5, No. 4-1, 2016, pp. 44-52.  
doi: 10.11648/j.ajmp.s.2016050401.17

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## **Formal presentation of the new space geometry that underlies the trispatial model**

Presentation text for the article titled "*On an Expanded Maxwellian Geometry of Space*". Presented on July 7, 2000 in plenary session of the Congress-2000 event at St Petersburg State University, Russia. The article was published on pages 291 to 310 of the congress proceedings.

- **Presentation in plenary session at CONGRESS-2000**
- **Présentation en session plénière à l'événement CONGRESS-2000**
- **Presentación en sesión plenaria en el CONGRESS-2000**
- **Vortrag in Plenarsitzung auf dem CONGRESS-2000**

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**Conference paper published in the proceedings of Congress-2000.**

Definition of an expanded Maxwellian geometry of space that allows description of a possible mechanics 1) of motion of photons; 2) of conversion of a photon of energy 1.022 MeV or above to a pair electron/positron as it passes close to a nucleus as well as re-conversion of such a pair to a single photon through Coulomb interaction close to a nucleus; 3) of creation of protons and neutrons from the capture within a volume of space of diameter  $2.116708996E-10$  meter of 2 electrons plus one positron, or alternately, of 2 positrons plus one electron, possessing insufficient energy to escape from that volume against mutual Coulombian interaction; 4) of gravitation.

- **On an Expanded Maxwellian Geometry of Space**

Proceedings of Congress-2000 – Fundamental Problems of Natural Sciences and Engineering. (2000). Volume 1, St-Petersburg, Russia. pages 291-310.

- **A propos d'une géométrie maxwellienne augmentée de l'espace**
- **Sobre una geometría maxwelliana ampliada del espacio**
- **Über eine erweiterte Maxwellsche Geometrie des Raums**

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**References**

- [1] A. Einstein, E. Schrödinger, W. Pauli, L. Rosenfeld, M. Born, I. & F. Joliot-Curie, W. Heisenberg, H. Yukawa, et al. *Louis de Broglie, physicien et penseur*. Éditions Albin Michel, Paris, 1953.
- [2] Michaud, A. (1999) *Theory of Discrete Attractors*, Canada, SRP Books, 1999.  
<https://www.smashwords.com/books/view/159189>
- [3] Michaud, A. (2000) *On an Expanded Maxwellian Geometry of Space*. Proceedings of Congress-2000 – Fundamental Problems of Natural Sciences and Engineering. (2000) Volume 1, St.Petersburg, Russia, pages 291-310.  
[https://www.researchgate.net/publication/357527119\\_On\\_an\\_Expanded\\_Maxwellian\\_Geometry\\_of\\_Space](https://www.researchgate.net/publication/357527119_On_an_Expanded_Maxwellian_Geometry_of_Space)
- [4] Michaud A (2004). *Expanded Maxwellian Geometry of Space*. 4<sup>th</sup> Edition, SRP Books.  
<https://www.smashwords.com/books/view/163704>

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**Other articles in the main project:**

- **INDEX - General Neurolinguistics (Conceptual Thinking)**