De Broglie’s Double-Particle Photon  
(Expanded republication PI)

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Abstract: Establishment of an LC equation and of a local fields equation describing permanently localized photons from the analysis of kinetic energy circulation within the energy structure of the double-particle photon that Louis de Broglie hypothesized in the early 1930's. Among other interesting features, these equations provide a mechanical explanation to the localized photon properties of self-propelling at the speed of light and of self-guiding in straight line when no external interaction tends to deflect its trajectory. This paper summarizes the seminal considerations that led to the establishment of the mechanical conversion processes involving electromagnetic energy and mass from electromagnetic photon emission to nucleon construction from the trispatial geometry perspective.

Keywords: electromagnetic theory, kinetic energy, photon, acceleration, electron-positron pairs, 1.022 MeV, LC equation, trispatial geometry.

This paper was initially published in the Journal of Physical Mathematics:  

An expanded version of the same article was republished upon 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.

https://doi.org/10.9734/bpi/nupsr/v4/1979F  

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:
APPENDIX A

Summary of Paul Marmet’s lifetime achievements

Paul Marmet, Ph. D. (1932-2005) was a high level physicist and experimentalist very dedicated to exploring every aspect of fundamental physics in search of any unsettled or doubtful issue, that he eventually analyzed in search of possible avenues of resolution. He then progressively offered the outcome of his analyses for consideration by the community in numerous articles either published or presented in conferences. Many of these analyses seemed to lead outside the box, as the saying goes, which always was the hallmark of leading edge research, the box being in context the current set of rigid orthodox ideas and concepts currently accepted in the physics community as being in agreement with the Copenhagen Interpretation philosophy.

Being well aware of this situation, as revealed by his clearly expressed opinion in this regard in a book published in 1993 [30], he always worked at these analyses as personal endeavors because it was well known that most in the physics community frowned upon any type of research that questions this philosophy, and as it turns out, in some institutions in which a sufficient number of researchers share this dominant philosophy, any such research endeavors are severely repressed if not discontinued, as we will shortly see.

From the day he completed his Ph.D. thesis in 1960 at Université Laval that introduced a new spectrometer design, Marmet worked with his mentor Larkin Kerwin at developing further and experimenting with this new electron source, able to generate and guide thermal electrons possessing momentum energy as low as a few eV each, allowing easy exploration of the properties of negatively ionized atoms in nature, that resulted in about 70 articles on spectroscopy to eventually be published, until their pioneering work on this new electron source was published in 1987 in Citation Classics [31]. From 1960 to 1998, 35 articles on other issues were also published and about 200 other related papers were presented in numerous international and national meetings.

He was a member of the Royal Society of Canada and was more than once granted awards for his pioneering work in spectrometry before finally becoming Assistant Professor of Physics at the University of Ottawa in 1990.

His tenure in this institution could not be better summarized than with these few quotes taken from the website of his Estate [32]:

“Between 1978 and 1998, the author also published several other papers related to the fundamental principles in physics. Several of these papers are presented on this web site. In 1997-99, physicists of the establishment showed fierce disagreement with the fact that Marmet’s research implied that the fundamental principles of physics were being questioned. Although the experimental work, which could determine the energy of numerous quantum states was highly appreciated and even honored, the physics establishment required that the author should stop questioning the fundamental principles of physics. The author was first informed by NSERC (Natural Science and Engineering Research Council of Canada) to stop doing that fundamental research despite the fact that, being theoretical, it required no research funds - all research grants were used for the experimental work needed for the electron impact apparatus. Since the fundamental research was still going on the following year, the grant was...”
cut to zero, putting an end to experimental work using the monoenergetic electron beams."

Then, in a move so reminiscent of Galileo's time:

“In May 1999, the head of the physics department came to Marmet's office and said: “Ce n’est pas ton bureau que nous voulons, ton problème est que tu remets en question les principes fondamentaux de la physique.” (“We do not want your office, your problem is that you keep questioning the fundamental principles of physics.”). Three months later, a letter was sent requiring Marmet's office to become unoccupied before the end of the month. Without research grant and being expelled from his office, Dr. Marmet continued his research alone at home.”

Finally, the leading edge instrument that he conceived and then developed with his mentor and colleague Larkin Kerwin was apparently willfully destroyed:

“This was the irrevocable death of a unique instrument in the world, which was able to measure the electronic structure of negative ions and their ionization efficiency curve using a high resolution monoenergetic electron beam. A few months later, the instrument was destroyed. Also, this shows that physics is not only a science, it is a doctrine. Therefore, there are heretics. It's not different from Galileo’s time!”

After having been so cavalierly and unjustly chased out of his tenure for doing fundamental research in the physics department of an institution supposedly dedicated to higher education and research, now liberated from the constant hostility of his immediate colleagues and of the University of Ottawa authorities, he found the peace of mind required to resume his personal fundamental research project.

The ultimate outcome of his research was the brilliant derivation from the Biot-Savart equation previously described that explains the direct relation that he discovered between the transverse magnetic field increase of accelerating electrons and their simultaneous transverse mass increase (See Section 6), the first historical publication of which seemed not to have been welcome in any western scientific journal, but was nevertheless welcomed 4 years later in 2003 on the other side of the planet, two years before he passed away, by an engineering journal of the Kazan State University [13].

Fortunately, this author hit upon his paper by sheer chance, identifying his groundbreaking derivation as a major grounding element in the potential definition of a new paradigm in fundamental physics, leading to the harmonization of electromagnetism with classical/relativistic mechanics and with Quantum Mechanics at the subatomic level, now available in a series of freely downloadable articles and also as a set of two monographs synthesizing the electromagnetic mechanics of elementary particles [33] [34].

There is little doubt in this author's mind that the upcoming generation will cast a harsh look at the behavior of the authorities of the University of Ottawa and of the Natural Science and Engineering Research Council of Canada for what they did to one of the top level physicist and experimentalist of the 20th century, Paul Marmet, and at the behavior of the individuals who took upon themselves to authorize the destruction of a unique instrument that did not belong to them, but to the scientific community, since it gave access to the same energy range as the scanning tunnelling microscope.

Other papers by the same author
Electromagnetic Mechanics of elementary particles